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Vol. I

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 706

**CITY OF CHICAGO, A MUNICIPAL CORPORATION,
BOARD OF HEALTH OF THE CITY OF CHICAGO,
ET AL., PETITIONERS,**

vs.

FIELDCREST DAIRIES, INC.

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SEVENTH CIRCUIT**

PETITION FOR CERTIORARI FILED OCTOBER 20, 1941.

CERTIORARI GRANTED NOVEMBER 24, 1941.

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1941.

No.

CITY OF CHICAGO, (A MUNICIPAL CORPORATION), BOARD
OF HEALTH OF THE CITY OF CHICAGO, DR.
ROBERT A. BLACK, HEALTH COMMISSIONER AND ACT-
ING PRESIDENT OF BOARD OF HEALTH OF THE CITY OF
CHICAGO,

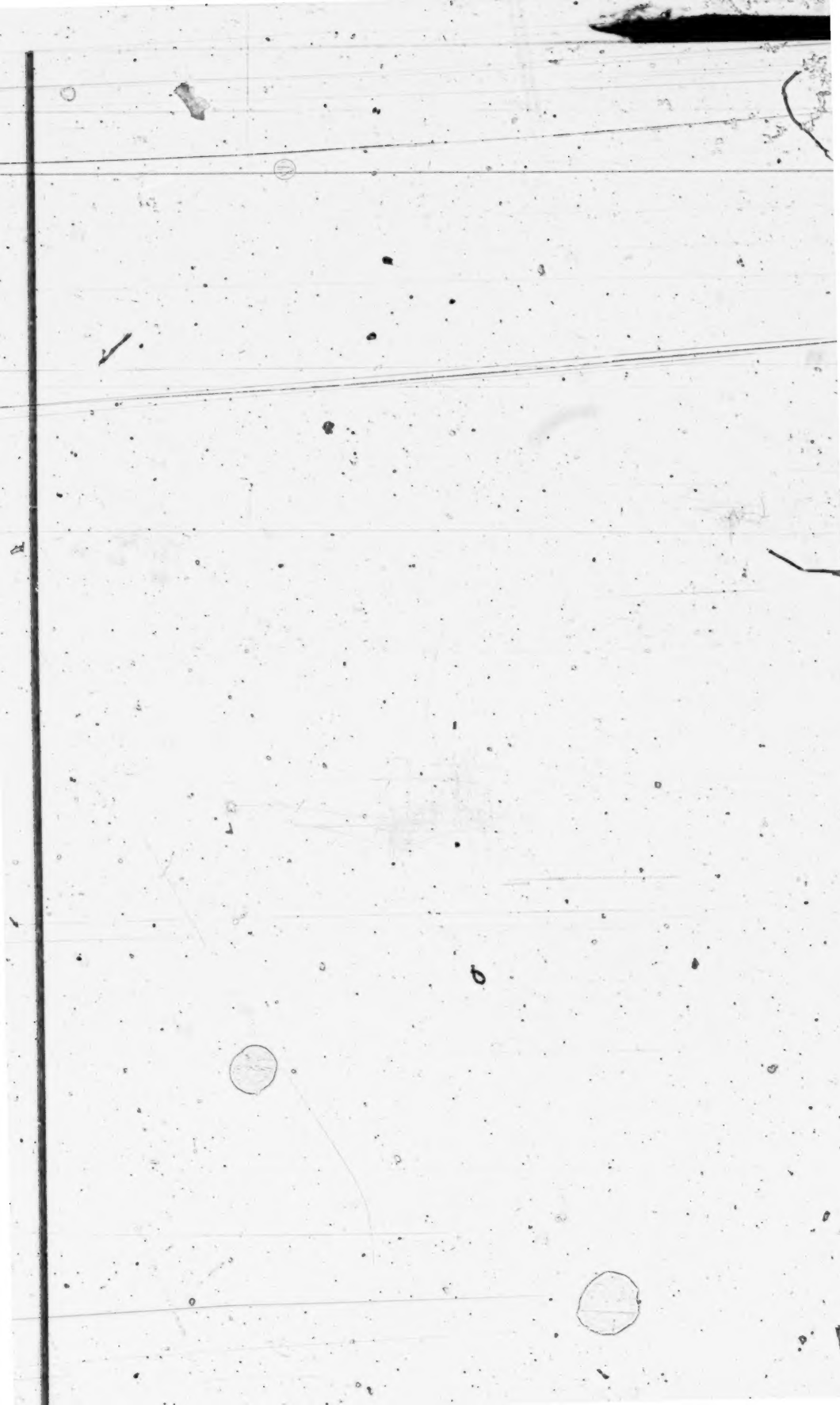
Petitioners,

vs.

FIELDCREST DAIRIES, (INC.),

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SEVENTH CIRCUIT.



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TRANSCRIPT OF RECORD

IN THE
United States Circuit Court of Appeals
For the Seventh Circuit

No. 7502

FIELDCREST DAIRIES, (Inc.),

Plaintiff-Appeller,

vs.

**CITY OF CHICAGO, (A MUNICIPAL CORPORATION),
BOARD OF HEALTH OF THE CITY OF CHICAGO,
DR. ROBERT A. BLACK, HEALTH COMMISSIONER AND
ACTING PRESIDENT OF BOARD OF HEALTH OF THE CITY OF
CHICAGO,**

Defendants-Appellants.

Appeal from the District Court of the United States for
the Northern District of Illinois, Eastern Division.

TRANSCRIPT OF RECORD FILED JAN. 20, 1941.
PRINTED RECORD.

IN THE
United States Circuit Court of Appeals
For the Seventh Circuit

No. 7502

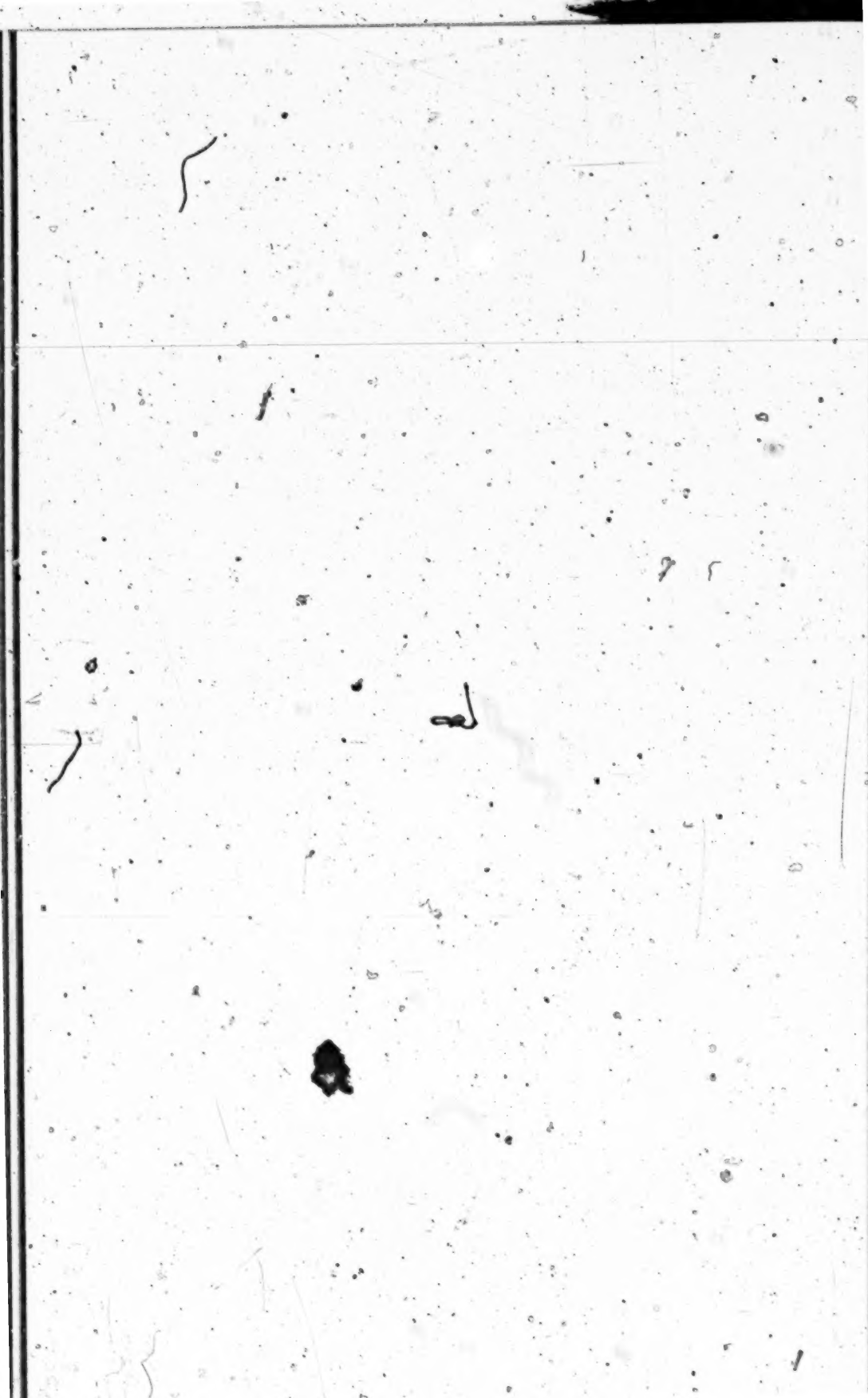
FIELDCREST DAIRIES, (INC.),
Plaintiff-Appellee,

vs.

**CITY OF CHICAGO, (A MUNICIPAL CORPORATION),
BOARD OF HEALTH OF THE CITY OF CHICAGO,
DR. ROBERT A. BLACK, HEALTH COMMISSIONER AND
ACTING PRESIDENT OF BOARD OF HEALTH OF THE CITY OF
CHICAGO,**

Defendants-Appellants.

**Appeal from the District Court of the United States for
the Northern District of Illinois, Eastern Division.**



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2215 Pleas in the District Court of the United States for Placita.
the Northern District of Illinois, Eastern Division,
begun and held at the United States Court Room, in the
City of Chicago, in said District and Division, before the
Honorable Charles E. Woodward, District Judge of the
United States for the Northern District of Illinois on
Twenty-third day of October, in the year of our Lord one
thousand nine hundred and forty, being one of the days of
the regular October Term of said Court, begun Monday, the
Seventh day of October, and of our Independence the 165th
year.

Present:

○ Honorable John P. Barnes, District Judge.

William H. McDonnell, U. S. Marshal.

Hoyt King, Clerk.

2216 IN THE DISTRICT COURT OF THE UNITED STATES

Northern District of Illinois,

Eastern Division.

Fieldcrest Dairies, (Inc.)

vs.

City of Chicago (a Municipal corporation), Board of Health of the City of Chicago, Dr. Robert A. Black, Health Commissioner and Acting President of Board of Health of the City of Chicago.

Civil Action
No. 316.

Be It Remembered, that the above-entitled action was commenced by the filing of the following Complaint in Chancery in the above-entitled cause, in the office of the Clerk of the District Court of the United States for the Northern District of Illinois; Eastern Division, on this the Second day of February, A. D. 1939.

Filed
Feb. 2,
1939.

2217 IN THE DISTRICT COURT OF THE UNITED STATES.

(Caption—316)

COMPLAINT IN CHANCERY FOR A DECLARATORY JUDGMENT—EQUITABLE RELIEF SOUGHT.

To the Honorable Judges of the District Court of the United States, Northern District of Illinois, Eastern Division, in Chancery Sitting:

1. Plaintiff Fieldcrest Dairies, (Inc.) alleges that it is a duly organized and existing corporation under the laws of the State of Michigan, and that it is now duly authorized to, and is doing business in the State of Illinois by virtue of a certificate so authorizing it to act and issued by the Secretary of the State of Illinois on November 29, 1937; that plaintiff was incorporated in the State of Michigan on November 5, 1937, and thereafter duly qualified to transact business in the State of Illinois on the date aforesaid.

2218 2. Plaintiff alleges that the amount in controversy in this litigation is in excess of Three Thousand

Dollars, (\$3,000.00); that the plaintiff is now expending daily large sums of money in the use of machinery and equipment for the bottling, packaging, sealing and distribution of milk and milk products in "Pure-Pak" non-absorbent single service containers made of virgin spruce material; that said containers are used in the distribution of milk by the plaintiff and in its sale of milk and milk products in the County of Cook and in the cities and villages hereinafter described; that said sale of milk and milk products is to retail stores and to a large number of consumers in said cities and villages hereinafter described.

3. Plaintiff further alleges that it is now doing business in the State of Illinois and the purposes and objects for which it was organized and now exists are: to buy, sell, deal in, manufacture, process, cut, store and ship cream, milk, butter, cheese, ice cream, ice-cream mix, sugar, condensed milk, powdered milk, evaporated milk, malted milk, distilled water, milk products and by-products, ice and all such other articles as may be necessary or may be conveniently used in connection with the aforesaid mentioned business or businesses; to own, lease and manage, directly or through subsidiaries, dairies and dairy farms, creameries and cheese factories, and conduct a general manufacturing business; that said business is now being carried on in the vicinity of the City of Chicago by the plaintiff corporation and milk and milk products are being sold and distributed by the plaintiff in Winnetka, Elmhurst, 2219 Brookfield, Western Springs, Glen Ellyn, Villa Park, Evanston, Wilmette, Glencoe, Oak Park, Downers Grove, Hinsdale, LaGrange, Berwyn, Riverside, River Forest, Bellwood, Elmwood Park and twenty-four other cities and villages in and about the County of Cook and other counties in the State of Illinois; that said sales and distribution of milk and milk products by plaintiff are made by permission and consent of the health officers, the boards of health and the local officials or authorities in said cities and villages. Plaintiff further alleges that in numerous of said above cities and villages, the United States Public Health Service Standard Milk Ordinance is in full force and effect and governs the sale and distribution of milk and milk products, and that plaintiff's sale and distribution in said cities and villages is in compliance with said ordinance in force in said municipalities.

4. Plaintiff further represents that the milk and milk products sold and distributed by it are secured bottled,

pasteurized and packed at its plant and factory located seventy-six miles northwest of Chicago at Chemung, in McHenry County, in the State of Illinois; that said plant, equipment and pasteurization process have been approved by the State of Illinois and permit issued to the plaintiff on November 17, 1938, and on January 18, 1939 renewed by the State of Illinois under which plaintiff now pasteurizes, bottles, packs and packages its milk and milk products for sale as aforesaid; that milk and milk products sold by the plaintiff are pasteurized, bottled, packed, packaged 2220 and sealed by plaintiff at Chemung, Illinois, at the plant aforesaid, in single service containers known and described as "Pure-Pak" which containers are of non-absorbent material; that milk of Grade A quality, whipping and coffee cream, buttermilk, sour cream and chocolate milk are sold by the plaintiff in the cities and villages aforesaid; that a true sample of said single service "Pure-Pak" quart container of non-absorbent material in which said milk is bottled, packaged, sealed and sold to the public is filed with this Complaint with the Clerk of this Court and marked Exhibit "A" for identification and made a part of this Complaint by reference thereto. Plaintiff alleges that all statements written on said container above referred to are true in substance and in fact with regard to measurement, packaging, pasteurization, sealing, quality of contents and place of packaging; that said container above described is sterile, sanitary and made of non-absorbent material, in every respect with regard to manufacture, packaging, sealing, quality of virgin spruce material, and all other materials used and entering into the manufacture of said container and in its sale containing milk and milk products, complies with all ordinances and the rules and regulations of the Board of Health of the City of Chicago.

5. Plaintiff attaches to and incorporates in this Complaint, a true copy of the ordinance of the City of Chicago, known as "Mayor Kelly Milk Ordinance, Passed by the City Council January 4, 1935 and adopted January 8, 1935," together with all amendments thereto now in full force 2221 and effect "for the establishment of standards and requirements for milk and milk products" by said City of Chicago and incorporates the same said ordinance as a part of this Complaint by reference thereto and said ordinance is identified as Exhibit "B."

6. Plaintiff further alleges that said "Pure-Pak" non-absorbent single service container excels all other milk con-

tainers in and for the protection of human life and for the preservation and protection of public health in the City of Chicago; that it is more economical to use and easy of handling in the use and sale and distribution of Grade A milk and milk products to the retail trade in said City than metal and glass containers; and plaintiff further alleges that said containers used by it daily contain true and correct measure and true and correct quality and quantity of milk and milk products contained therein, and that said same measure, quality and quantity are identified and recited clearly on the sides of said container.

7. Plaintiff further alleges that the machinery and equipment used by it in the bottling, packaging, sealing and pasteurization of milk and milk products sold by it in the "Pure-Pak" single service, sterile, sanitary and non-absorbent container are such as to prevent any part of any person or his or her clothing from coming in contact with any surface with which milk or milk products come in contact with in said process aforesaid; that said automatic machinery used in said process of bottling, sealing and packaging of said milk is of a design which does not
2222 require frequent adjustment during operation so as to expose milk to the danger of contamination and all parts of said machinery and equipment can be readily cleaned and are of such construction as to prevent any contamination reaching the inside of the bottler or any part of said equipment; that all surfaces with which milk comes in contact are of smooth, not readily corrodible material and the same are very accessible for cleaning; that the sealing of milk and milk products bottled and packaged and sealed in said "Pure-Pak" container is done by said same automatic machinery and not by hand; that all employees coming in contact with the milk, milk products and containers aforesaid, including the equipment, wear clean outer garments and maintain cleanliness at all times while engaged in the bottling, packaging, sealing and pasteurization of said milk and milk products sold by the plaintiff; that all vehicles used by the plaintiff for the transportation of milk or milk products are completely enclosed and so constructed and operated as to protect the milk or milk products from the sun and freezing and from contamination; that said vehicles are kept clean at all times and no substance capable of contaminating milk or milk products is transported with milk or milk products in any such manner so as to permit contamination to exist. Plaintiff

further alleges that all said vehicles used by it in the distribution of milk or milk products bear its name as distributor prominently displayed thereon.

8. Plaintiff further alleges that the milk plant and receiving station at Chemung, Illinois, where its milk 2223 and milk products are bottled, packaged, sealed, pasteurized and made ready for sale has been inspected and approved by the Board of Health of the City of Chicago, for the sale of Grade A milk and cream in the City of Chicago at wholesale; that said approval exists at this time and permit for the sale of said milk and milk products from said plant, and of said plant is shown by Permit Number 1521 for said milk receiving station described therein; that said permit was issued by said above Board of Health and is in full force and effect at this time and has been extended to the plaintiff herein by the Board of Health of the City of Chicago, and said plant is being daily operated in conformity with all the rules and regulations of the Board of Health of the City of Chicago and all the provisions of said ordinance of said City therein described; that under said permit, thousands of gallons of milk and milk products are now being sold daily in the City of Chicago.

9. Plaintiff further alleges that in excess of one million "Pure-Pak" single service non-absorbent containers are being used daily throughout the cities and villages in the United States, by and with the consent of their respective boards of health and health commissioners, in the sale of milk and milk products; that plaintiff at this time, is delivering milk and milk products in said same above described containers to several hundred consumers and to retail dealers daily in said cities and villages heretofore described and set forth in Paragraph Two of this Complaint; that said volume of business is in excess of Six Thousand

Dollars (\$6,000.00) per month at the present time 2224 and said milk and milk products are being sold from and distributed in twelve sanitary refrigerated one and a half ton milk trucks, manufactured by International Harvester Company, and said trucks in every respect comply with all the rules and regulations of the Board of Health of the City of Chicago and the provisions of the ordinance hereinabove described in this Complaint.

10. Plaintiff further alleges that said above described containers are standard milk bottles and standard milk containers; are used daily in large quantities of a million in the following cities in the United States: Detroit, Cleve-

land, Washington, D. C., Toledo, Pittsburgh, Philadelphia, Harrisburg, Pa., New York City, Baltimore, Trenton, N. J., Ardmore, Pa., Boston, Jersey City, N. J., San Francisco, City of Superior, Wis., City of Wilmington, Del., Town of Montclair, N. J., and numerous other large cities; that said use of said "Pure-Pak" container in said cities and states is, and has at all times been, by and with the consent and approval of the respective boards of health of said cities and states; that said use in said cities and states has been approved and permitted for several years past and the same has been and is now without the slightest prejudice or danger to the health of the millions of users, and the millions of purchasers and consumers of milk and milk products sold in said "Pure-Pak" containers in the cities and states aforesaid; that said sales and transactions in said cities and states aforesaid and throughout the United States amount to more than One Hundred Thousand Dollars (\$100,000.00) per day and the money and property 2225 used and invested in said same machinery and equipment used in the bottling, packaging, sealing and pasteurization of milk sold in "Pure-Pak" non-absorbent single service containers amounts to approximately Five Hundred Thousand (\$500,000.00) Dollars.

11. That said above described containers are standard milk containers and are excellent for their use from a sanitary standpoint; that they are safe and sterile and prevent multiplicity of handling and use of the same container again; they are light for handling and safe and sanitary in sealing, pouring and in the retention of milk for use and consumption from day to day; that said container fully complies with the rules and regulations of the Board of Health of the City of Chicago and the provisions of said ordinance described with regard to sealing, non-absorbent material, pasteurization and all other provisions and sections of said ordinance dealing with the handling and sale of milk and milk products at retail in the City of Chicago in quantities of less than one gallon; that plaintiff's place of business, its vehicles, methods and equipment used in the sale of milk and milk products are in every respect sanitary and fit for the uses and purposes of selling milk and milk products to the public in the City of Chicago; that the same comply with the provisions of the ordinance of the City of Chicago, described above, and the rules and regulations of the Board of Health of the City of Chicago at this time.

12. Plaintiff alleges that on January 11th, May 27th and June 2nd, 1937, requests and applications were made 2226 to the President of and to the Board of Health of the City of Chicago for and on behalf of plaintiff for permission and license under said ordinance, licensing and allowing plaintiff to sell, or offer for sale, expose for sale, dispose of, exchange, or deliver, milk, or milk products for human consumption in said "Pure-Pak" non-absorbent single service container; that said request and application was made in writing on the days aforesaid and with it, substantial and considerable statistical data from responsible and recognized authorities on the subject, after due search and investigation, with regard to the safety and sanitary sterile and non-absorbent quality of said container and the same was submitted to and filed with the Board of Health of the City of Chicago for study, consideration, examination and analysis so that said license and permit to sell milk and milk products might be issued to the plaintiff by the aforesaid Board of Health; that application and request on behalf of plaintiff was made to and of the Board of Health of the City of Chicago on January 23, 1939, for license and permission to be issued to the plaintiff for the sale of Grade A milk and milk products at wholesale in the City of Chicago from the plant hereinabove described; that on the 23rd day of January, 1939, plaintiff made request of and application to the Board of Health of the City of Chicago for a license or permit to sell milk of Grade A quality together with milk products in the City of Chicago and said application and request was made pursuant to and in conformity with all the provisions of 2227 the ordinances of the City of Chicago and the rules and regulations of the Board of Health and the provisions of said "Mayor Kelly Milk Ordinance"; that plaintiff delivered with said application a check in the amount of \$60.00 payable to the City Collector of the City of Chicago for said license and for use of its twelve trucks to be used in the sale and distribution of milk by plaintiff in said containers in the City of Chicago; that plaintiff tendered submission of any and all other information and data necessary and required or requested by the Board of Health of the City of Chicago for the issuance of said permit and license in order to be entitled to a permit or license under said ordinance and the rules and regulations of the Board of Health for the sale of Grade A milk and milk products in said container in the City of Chicago; and plaintiff now

stands, and has for a year past stood ready to furnish any and all further information and data requested or required by said Board of Health and to satisfy it that plaintiff is qualified and entitled to use said container in the City of Chicago; and plaintiff further alleges that to said request and applications aforesaid, plaintiff has not to date received said license or permit from the Board of Health of the City of Chicago, or the Health Commissioner of the City of Chicago.

13. Plaintiff further alleges that it can now sell Grade A milk and milk products in said container in the City of Chicago at this time to retail stores for consumers of milk and milk products and plaintiff is now ready, willing 2228 and able, and desirous of using said containers in said

City for the sale of Grade A milk and milk products in said container to a large number of stores and retail dealers and to the consumer public; that certain milk distributors are desirous and ready to contract with plaintiff to buy from plaintiff milk and milk products in said container at Eight Cents (\$.08) per quart; that the Board of Health of the City of Chicago, by Dr. Robert A. Black, acting Health Commissioner of the City of Chicago, after request was again made, verbally refused permission and consent to use said container in the City of Chicago on January 5, 1939; that said defendants above described continue to deny and refuse plaintiff permission to use said container; that said refusal is arbitrary, capricious, unreasonable and unlawful, and as a result thereof, causes substantial financial damage to the plaintiff daily; and also does other irreparable injury to the plaintiff in an amount of, and in excess of Three Thousand Dollars (\$3,000.00) at this time; and said damages continue to increase daily with said refusal.

14. Plaintiff further alleges that on the 5th day of November, 1936, request and application was made to the Board of Health of the City of Chicago, under the provisions of said ordinance for a license and permission to sell Grade A milk and milk products to be issued to plaintiff so that plaintiff would be permitted to use said "Pure-Pak" non-absorbent single service containers in the sale and distribution of Grade A milk and milk products in the City of Chicago; that on May 14, 1937 and to this 2229 date plaintiff has been refused or denied a permit for its use and said denial continues daily; that said denial and refusal is, under the provisions of said ordi-

nance and the rules and regulations of said Board of Health with regard to the distribution and sale of milk and milk products by plaintiff in the City of Chicago, unreasonable, capricious, discriminatory, invalid and in violation of the provisions of the Constitution of the State of Illinois and the provisions of the Constitution of the United States of America; that said refusal of said permit and license to the plaintiff by the Board of Health of the City of Chicago at this time is unlawful, unreasonable, capricious and without any basis from a health and sanitary standpoint under the provisions of said ordinance and the rules and regulations of the Board of Health; that said refusal has, and does irreparable damage to the plaintiff daily and has resulted in substantial damages and results in the taking of plaintiff's property without due process of law, to great damage of the plaintiff in the loss of sales, profits, trade, customers, valuable contracts, and the loss of gains from the sale of milk and milk products in said City of Chicago daily.

15. Plaintiff further alleges that it verily believes that its use of the "Pure-Pak" non-absorbent single service container in the City of Chicago without said permit or permission from the defendants will result in resistance and interference by the said defendants; and plaintiff verily believes that it will be prosecuted in courts of competent jurisdiction and that it will be otherwise harassed, annoyed, interfered with and resisted by said respondents if said container is used in this City, as aforesaid, without permission being first given by said defendants; and plaintiff further says that said interference will result in the loss of large sums of money to the plaintiff daily; and do other irreparable injury and much damage to plaintiff's business.

16. Plaintiff further alleges that said container is used daily by and with the consent of the State Department of Public Health of the State of Illinois; that said container complied with all the pertinent and relevant provisions of the statutes of the State of Illinois with regard to all sanitary and health measures now in force for the protection and preservation of public health and for the promotion of the general welfare of the residents of the State of Illinois.

17. Plaintiff further alleges that said hereinbefore described "Pure-Pak" containers are now used daily by

twenty-four approved milk and dairy plants in approximately two hundred municipalities in the United States of America; that several of these said milk plants are operating under the provisions and rules and regulations of the United States Public Health Service Standard Milk Ordinance, similar in substance to the ordinance and rules and regulations of the City of Chicago and Board of Health of the City of Chicago; that the operations of the plaintiff in the sale and distribution of Grade A milk and milk products in said containers outside of the City of Chicago have been approved by the State Department of Public Health of Illinois and said operations given a rating of over ninety percent. (90%), which rating exists at this time.

2231 18. Plaintiff further alleges that said described conduct of the defendants in this controversy is discriminatory, unreasonable, unlawful and prejudicial to the plaintiff without any just cause in fact or in law; and said conduct results in daily irreparable damage to the plaintiff and deprives the plaintiff of the equal protection of the laws in violation of the Fourteenth Amendment to the Constitution of the United States and Section Two of Article Two of the Constitution of the State of Illinois, and Section Thirteen of Article Two of the Constitution of the State of Illinois; and said acts of the defendants in this controversy deprive the plaintiff of its property without due process of law.

19. Plaintiff states that in and by the provisions of said "Mayor Kelly Milk Ordinance of the City of Chicago" hereinabove referred to and incorporated in this Complaint by reference thereto and attached as Exhibit "B" it is provided in part as follows:

"3090. Labeling and Placarding. All bottles, cans, packages, and other containers enclosing milk or any milk product defined in this ordinance shall be plainly marked or labeled with the following and only such other information as may be designated by the board of health:

1. The name of the contents as given in the definitions in this ordinance.

2. The word "pasteurized" only if the contents have been pasteurized.

3. The word "raw" only if the contents are raw.

4. The name and address of the producer if the contents are raw, and the name and address of the plant at

which the contents were pasteurized if the contents were pasteurized.

2232 5. In the case of vitamin D milk, the designation "vitamin D milk," and such other information as may be required by the board of health.

6. The permit number.

7. On all cans, bottles and other containers of pasteurized or certified milk, the words "to be sold" and thereafter the day of the week on which the milk or milk product is to be sold to the final consumer, the height of the letters of the day of the week to be not less than 3/16 inch on bottle caps, and not less than 5/8 inch on tags attached to each container when contained in cans.

8. On all cans and other containers of milk and milk products received by pasteurization plants from receiving stations, the day of the week received by the receiving station.

9. The word "milk" shall not appear or be used on any label, cap, receptacle, or container for any products except those defined in this article as milk, skimmed milk, buttermilk, cultured buttermilk, vitamin D milk, and any other products designated by the board of health."

20. Plaintiff further alleges that the pertinent regulations of the Board of Health of the City of Chicago under said ordinance concerning this controversy are as follows:

"All caps or labels on cans, bottles and other containers of pasteurized milk, cream and skimmed milk shall include the words "before noon" after the words "to be sold."

"A proof-print or sketch of the bottle cap or cover, or of the can tags and labels showing the size and arrangement of the lettering thereon, shall be submitted and approved by the board of health.

"When milk or milk products are enclosed in bottles or glass jars, the name or address blown into such bottle or glass jar, or otherwise indicated thereon, shall not be other than or different from that which is indicated on the cover or cap thereof."

2233 21. Plaintiff further alleges that in and by Section 3094 of said ordinance, it is provided as follows:

"... any milk or milk products sold in quantities of less than one gallon shall be delivered in standard milk bottles; provided, however, that nothing herein contained shall be construed to prohibit hotels, soda fountains, res-

taurants, and similar establishments from dispensing milk or milk products from sanitary dispensers approved by the Board of Health"

22. Plaintiff states that a footnote to this said section prepared by the Board of Health and published with said ordinance provides with respect to the purpose of using the standard milk bottle:

"The use of standard milk bottles for delivering milk and milk products in quantities less than one gallon is required in order to prohibit delivery in such containers as buckets, fruit jars, etc. which may be difficult to wash and to subject to adequate bactericidal treatment, which cannot be filled and capped with the proper equipment used for these purposes, and which it is often difficult to label properly."

23. Plaintiff alleges that the provisions of said ordinance do not prohibit the use of the "Pure-Pak" non-absorbent single service container hereinabove described; that no rule and regulation of the Board of Health prohibits the use of said container and the denial by the defendants of permission and license to the plaintiff to use said above described container is unreasonable, arbitrary, discriminatory and unlawful, and without any basis under the provisions of said ordinance and the discretion therein permitted to the Health Commissioner of the City of Chicago under the provisions of said ordinance with regard to the approval or disapproval of the milk container 2234 to be used in the sale of milk and milk products in the City of Chicago, is invalid, unlawful and capricious, and results in discrimination at will, whim or caprice and without good cause or merit so as to prejudice plaintiff and to deprive the citizens and milk consumers of the City of Chicago of the right and opportunity to purchase and receive milk of Grade A quality and milk products in sanitary, sterile bottles or "Pure-Pak" containers at a price equalling that charged for milk of the same quality and quantity sold in glass containers or other packages at retail, in restaurants, hotels, and other dispensers of food and food products in the City of Chicago; that said ordinance contains no definition of a "standard milk bottle" as used in said sections and paragraphs nor do any footnotes and explanations of the sections and provisions of said ordinance describe in any form or manner, or in detail, what a "standard milk bottle" is, its shape, size,

or the material out of which said receptacle must be made; that said ordinance with regard to its restrictions and prohibitions, if any exist, against the use of "Pure-Pak" non-absorbent single service containers in the City of Chicago is unconstitutional and invalid and results in the depriving of plaintiff of due process of law and equal protection of the laws contrary to the aforesaid Amendment to the Constitution of the United States; Section Two, Article Two of the Constitution of the State of Illinois, and Section Thirteen, Article Two of the Constitution of the State of Illinois; that said ordinance as applied to plaintiff's 2235 use of "Pure-Pak" non-absorbent single service containers and their prohibition in the use and sale, or offer for sale, of milk and milk products in the City of Chicago, amount to the taking and damaging of the property of plaintiff without just compensation in violation of Section Thirteen, of Article Two of the Constitution of the State of Illinois, and said classification and discrimination is void.

Wherefore, plaintiff prays:

1. That this Honorable Court enter a declaratory judgment in this controversy construing the law as to certain acts of defendants described herein and finding that:

(a) Said ordinances herein described, and all the rules and regulations of the Board of Health of the City of Chicago do not prohibit and prevent plaintiff from using said "Pure-Pak" non-absorbent single service container in the City of Chicago for the sale of Grade A milk and milk products; or to further declare that the use of said above container in the City of Chicago is not contrary to or in violation of said "Mayor Kelly Milk Ordinance" or any other ordinance and the rules and regulations of the Board of Health of the City of Chicago.

(b) Or, to declare or decree that said ordinances of the City of Chicago and the rules and regulations of the Board of Health, in so far as they attempt to deny and prohibit and apply to the plaintiff in its use of said single service container above described, are invalid, unreasonable and discriminatory and unconstitutional and of no 2236 force and effect with regard to prohibiting the use of said above container by plaintiff in the City of Chicago in its sale of Grade A milk and milk products.

2. And plaintiff further prays that it be awarded a.

writ of injunction, restraining the defendants herein from in any form or manner prohibiting and interfering with the plaintiff in the use of said "Pure-Pak" non-absorbent single service container in the sale of Grade A milk and milk products in the City of Chicago.

3. That plaintiff be awarded all other relief in the premises necessary and proper and in accordance with law, equity and good conscience concerning its present and future use of said container; and concerning and with regard to all health ordinances of the City of Chicago and said "Mayor Kelly Milk Ordinance" and the rules and regulations of the Board of Health of the City of Chicago; that the defendants herein and each of them be ruled to plead or answer this Complaint at a short date to be determined by this Court (and as is provided by the rules of this Court) and that upon issues being joined on said pleadings in this controversy, and all motions therein, the same be set down by this Court for early hearing and disposition; and further that all other orders be entered in this cause with regard to any early disposition of this controversy, as is by rule of this Court now provided.

Fieldcrest Dairies, (Inc.),

Plaintiff.

By: S. E. Dean, Jr.,

Duly Authorized Agent and President.

Gariepy & Gariepy,

By Fred A. Gariepy,

Matthews, Kaleth & Shapiro,

By Thos. A. Matthews,

Attorneys for Plaintiff.

2237 State of Illinois, }
County of Cook. } ss.

S. E. Dean, Jr., on oath deposes and says that he is the duly authorized agent and officer of Fieldcrest Dairies, (Inc.); that he has read said Complaint above by him subscribed and knows the contents of the same; that said Complaint is true in substance and in fact; that as to said allegations with regard to information and belief therein stated, affiant says that he believes the same are true.

S. E. Dean, Jr.,

Affiant.

Subscribed and Sworn to before me, this 2nd day of February, 1939.

(Seal)

William Jacobs,
Notary Public.

Endorsed: Filed Feb-2 1939 at 9:47 o'clock A. M. Hoyt King Clerk.

Plaintiff's Exhibit "X" attached to complaint is omitted at this point as it appears in the record as Exhibit A attached to the Defendant's Answer.

Filed
Feb. 27,
1939.

2240 And on, to-wit, the 27th day of February, A. D. 1939, came the Defendants by their attorneys and filed in the Clerk's Court of said Court their certain Answer, in words and figures following, to-wit:

2241 IN THE DISTRICT COURT OF THE UNITED STATES.

• • (Caption—316) • •

ANSWER.

The defendants, the City of Chicago, the members of the Board of Health of the City of Chicago, and Dr. Robert A. Black, Acting President of the Board of Health of the City of Chicago, by Barnet Hodes, Corporation Counsel, and Walter V. Schaefer and Charles P. Horan, Assistant Corporation Counsel, their attorneys, answering the complaint in this case say:

1. The City of Chicago has a population of approximately three and one-half million. During the year 1937 an approximate daily average of 277,000 gallons of milk were sold for consumption in the City of Chicago. During the same period an approximate daily average of 27,500 gallons of cream and 20,750 gallons of milk products, such as buttermilk and chocolate milk, were sold for consumption in the city.

2. Milk, when properly produced, processed and handled, is the most nearly perfect human food. There is no article of human food more generally used than milk. Pure milk is an indispensable item in the diet of infants and children, and it is likewise an important constituent part of the diet of most invalids, and the

2242 aged and infirm. Far more milk is consumed by in-

infants and children than is consumed by all of the other age groups in the population combined.

3. Although milk is an excellent human food, it is also an excellent medium for the growth and transmission of bacteria. The precise factors which make milk an ideal food for human beings of all ages also make milk a perfect food for bacteria.

4. Statistics collected by the United States Public Health Service show that during the decade ending with the year 1934, there was in the United States an annual average of 43 reported epidemics causing widespread illness and numerous deaths which have been traced directly to improper milk supplies. Most of these outbreaks have been typhoid fever epidemics, but unwholesome milk has also caused epidemics of septic sore throat, diphtheria, scarlet fever, dysentery and poliomyelitis. Impure milk supplies have also resulted in the spread of bone and glandular tuberculosis and infantile diarrhea, as well as in the spreading of diseases of an epidemic nature.

5. Because of the grave menace to the health of the public generally which is inherent in an impure milk supply, and also because of the extreme susceptibility of infants and children, who are the principal consumers of milk, to the presence of disease organisms, impurities, adulterants and foreign substances of all types in milk, the maintenance of a pure and wholesome milk supply is one of the principal concerns of municipal government, and has long been so recognized.

6. The United States Public Health Service has manifested its recognition of the relation of pure and wholesome municipal milk supplies to the national public health by the establishment of a division to render assistance to municipalities in formulating and enforcing regulations concerning the production, processing and distribution of milk, and in recent years the United States Public Health Service has formulated its "United States Public Health Service Standard Milk Ordinance and Code," and has actively urged the adoption of the ordinance and regulations which it formulated, or of legislation containing equivalent public health safeguards, by municipalities throughout the country.

7. The health of the public cannot adequately be protected against the hazards of an impure milk supply unless every step in the production, processing and distribu-

tion of milk is carefully safeguarded in such a manner that disease organisms present in milk are eliminated, and the possibility of the introduction of disease organisms, impurities, adulterants, or any foreign substances into milk is prevented during its production, processing and distribution.

8. Tuberculin tests for cattle are required in the State of Illinois and almost uniformly throughout the country. The plant and equipment of the farmer who produces milk for consumption in fluid form, as well as the plant and equipment of each person subsequently handling such milk during the course of its processing and distribution, are regulated with a view to preventing the possibility of the contamination or adulteration of milk.

9. The General Assembly of the State of Illinois has conferred authority upon the City of Chicago:

"To do all acts, make all regulations which may be necessary or expedient for the promotion of health or the suppression of disease." (Ill. Rev. Stat. 1937, Ch. 24, Par. 65, 77.)

10. In the exercise of the powers conferred upon it by the General Assembly for the protection of the health of the inhabitants of the City, the City of Chicago and its Board of Health have adopted an ordinance and rules and regulations pertaining to the production, processing and distribution of milk, a copy of which ordinance and rules and regulations is attached hereto and marked Exhibit "A."

2244 11. The ordinance and the regulations of the city concerning the production, processing and distribution of milk cover every phase of the handling of milk from the cow to the consumer because improper handling of milk in the distribution thereof can and will nullify the effect of sanitary production and processing. Included in the ordinance and regulations of the City of Chicago are the provisions assailed by the plaintiff in this case, which are as follows:

"• • • Any milk or milk products sold in quantities of less than one gallon shall be delivered in standard milk bottles: • • •" (Revised Chicago Code of 1931, as amended, Section 3094.)

"Item 10p.—Construction and Repair of Equipment and Containers.

All equipment and containers with which milk or milk products come in contact shall be constructed in such manner as to be easily cleaned and shall be kept in good repair.

Satisfactory compliance.—This items shall be deemed to have been satisfied if:

(1) All surfaces with which milk comes in contact consist of smooth, not readily corrodible metal or unbroken vitreous material, and

(2) All joints are soldered flush with the surface or otherwise fitted to avoid open seams, or the surface, if vitreous, is continuous, and

(3) All surfaces with which milk or milk products come in contact are easily accessible for cleaning, and are self-draining, and

(4) All containers and other equipment are in good repair, free of breaks and corroded places, and

(5) All equipment and containers used are approved by the board of health. . . . (Item 10p. of regulations of board of health supplementing Section 3093 of the Revised Chicago Code of 1931, as amended.)

12. The use of paper containers for the distribution of milk is a relatively recent development. Only within the past five years has the paper manufacturing industry become aware of the existence of public health problems in connection with the use of paper containers for articles of food and drink. The attention of the paper industry has been devoted primarily to securing favorable consumer reaction to its products, and has been devoted in only a secondary sense, and in very recent years, to the public health problems inherent to the use of paper containers.

2245 13. The Board of Health for the City of Chicago has carefully watched developments in the field of production of paper containers for milk and milk products and has investigated the merits of all types of paper containers from a public health point of view. The defendants are informed and verily believe that no paper container for fluid milk and milk products has so far been developed which is sterile, non-absorbent or sanitary. The defendants allege as a fact that the so-called "Pure-Pak" container is neither non-absorbent nor sterile, nor is it

a sanitary container for the distribution of milk and milk products. No permit has been issued by the Board of Health of the City of Chicago for the use of the so-called "Pure-Pak" container, or any other type of paper container for the distribution of milk or milk products in the City of Chicago. No paper container has ever been used for the distribution of milk or milk products in the City of Chicago.

14. The refusal of the Board of Health to permit the use of paper containers for the distribution of milk and milk products in the City of Chicago has been in the performance of its duty to protect the health of the inhabitants of the City of Chicago, and has been pursuant to the ordinances of the City of Chicago and the rules and regulations of the Board of Health. It has in no sense been arbitrary, capricious, unlawful or discriminatory.

15. The defendants admit that the plaintiff is distributing milk and milk products in so-called "Pure-Pak" containers in some of the suburban communities in the vicinity of Chicago. The defendants also admit that the Board of Health has issued Permit No. 1521 to the plaintiff for the operation of a milk receiving station at Chemung, Illinois, but deny the allegations of paragraph eight of the complaint that said milk receiving station has been inspected and approved by the Board of Health for the sale of Grade "A" milk and cream at wholesale in the City of Chicago. The defendants specifically deny that the Board of Health of the City of Chicago has inspected and 2246 approved the pasteurization plant of the plaintiff at Chemung, Illinois, and allege that no milk or milk products pasteurized in said milk receiving station are being sold or may lawfully be sold in the City of Chicago.

16. The defendants have no knowledge or information sufficient to form a belief as to the truth of the following allegations of the complaint:

(a) As to the allegations of paragraph one concerning the corporate organization of the plaintiff.

(b) As to the allegations of paragraph two concerning the amount in the controversy and the alleged expenditures of the plaintiff.

(c) As to the allegations of paragraph three concerning the objects of incorporation of the plaintiff.

(d) As to the allegations of paragraphs three, nine, ten and seventeen concerning the use of so-called "Pure-

"Pak" containers in certain specified cities and compliance with the applicable health regulations of said cities.

(e) As to the allegations of paragraphs nine and ten of the complaint concerning the financial volume of the business done by the plaintiff and others in the distribution of milk and milk products in the so-called "Pure-Pak" containers, and concerning the amount of money invested in equipment for making said containers.

(f) As to the allegations of paragraph thirteen of the complaint concerning the financial injury alleged to result to the plaintiff because of the defendant's refusal to permit the use of so-called "Pure-Pak" containers for the distribution of milk and milk products in Chicago.

(g) As to the allegations of paragraph sixteen concerning the consent of the Department of Public Health of the State of Illinois as to the use of said so-called "Pure-Pak" containers.

2247 17. The defendants have no knowledge or information sufficient to form a belief as to the truth of the allegations of paragraph four of the complaint concerning the issuance and renewal of a permit for the pasteurization plant of the plaintiff by the State of Illinois; but defendants allege that the issuance or the renewal of such a permit has no bearing upon the legal right of the plaintiff to sell milk pasteurized at said plant within the City of Chicago.

18. With respect to the allegations of paragraph seven of the complaint defendants deny that the paper from which the so-called "Pure-Pak" containers are made, the method of manufacturing and processing said paper, and the machinery and process employed in forming and filling said containers are such as will adequately protect the public health when such containers are used for the delivery of milk.

19. The defendants deny the allegations of paragraph eleven of the complaint, and specifically deny that the so-called "Pure-Pak" container is a standard milk bottle or standard milk container.

20. With respect to the allegations of paragraph fifteen of the complaint the defendants admit that the ordinances of the City of Chicago and the rules and regulations of the Board of Health of the City of Chicago pertaining to the production, processing and distribution of milk, will be enforced, and that the violation of said ordinances will be prosecuted. The defendants have no knowledge or informa-

tion sufficient to form a belief as to the truth of the other allegations of paragraph fifteen.

21. The use of paper containers, including the so-called "Pure-Pak" container, for the distribution of milk and milk products in the City of Chicago is prohibited by the ordinances of the City and the rules and regulations 2248 of the Board of Health. Said prohibition is a proper exercise of powers validly conferred upon the City by the General Assembly of the State of Illinois for the protection of the public health of the inhabitants of the City; its enforcement deprives the plaintiff of no rights guaranteed to it by the Constitution of the United States or of the State of Illinois.

- City of Chicago, a Municipal Corporation, the Board of Health of the City of Chicago, Robert A. Black, acting President of the Board of Health of the City of Chicago,

Defendants,

By Barnet Hodes,
Corporation Counsel,
Walter V. Schaefer,
Assistant Corporation
Counsel of the City of
Chicago,
Charles P. Horan,
Assistant Corporation
Counsel of the City of
Chicago,
Their Attorneys.

2249

EXHIBIT "A".

2250

Reprint Of The
Mayor Kelly Milk Ordinance
Passed by the City Council
January 4, 1935

and of the

Rules and Regulations
of the Chicago Board of Health
Adopted January 8, 1935
for the establishment of
Standards and Requirements
For Milk And Milk Products

(Cut)

City of Chicago

Edward J. Kelly, Mayor

Board of Health

Dr. Herman N. Bundesen, President
1933-1935

The City Council
Chicago

Honorable Edward J. Kelly, Mayor

Ald. J. M. Arvey, President Pro Tem.

Peter J. Brady
City Clerk

Edw. J. Padden
Chief Clerk

1st Ward John J. Coughlin
2nd Ward William L. Dawson
3rd Ward Robert R. Jackson
4th Ward B. A. Cronson
5th Ward James J. Cusack, Jr.
6th Ward John F. Healy
7th Ward Thomas J. Daley
8th Ward David L. Sutton
9th Ward Arthur G. Lindell
10th Ward William A. Rowan
11th Ward Thomas A. Doyle
12th Ward Byran Hartnett
13th Ward John E. Egan

Exhibit "A."

14th Ward James J. McDermott
15th Ward James F. Kovarik
16th Ward Terrence F. Moran
17th Ward Frank J. Corr
18th Ward Harry E. Perry
19th Ward O. E. Northrup
20th Ward William V. Pacelli
21st Ward John J. Lagodny
22nd Ward Henry Sonnenschien
23rd Ward John Toman
24th Ward J. M. Arvey
25th Ward James B. Bowler
26th Ward Frank E. Konkowski
27th Ward Harry L. Sain
28th Ward George D. Kells
29th Ward Thomas J. Terrell
30th Ward John S. Clark
31st Ward Thomas P. Keane
32nd Ward Joseph P. Rostenkowski
33rd Ward Z. H. Kadow
34th Ward Matt Porten
35th Ward Walter J. Orlikoski
36th Ward George W. Robinson
37th Ward Roger J. Kiley
38th Ward Henry J. Wieland
39th Ward James J. Hurley
40th Ward Joseph C. Ross
41st Ward James C. Moreland
42nd Ward Dorsey R. Crowe
43rd Ward Mathias Bauler
44th Ward John J. Grealis
45th Ward Edwin F. Meyer
46th Ward Oscar F. Nelson
47th Ward Albert F. Schulz
48th Ward John A. Massen
49th Ward George A. Williston
50th Ward James R. Quinn

Committee on Health

Terrell, Chairman; Ross, Vice-Chairman; Sutton, Egan, Moran, Northrup, Kells, Orlikoski, Robinson, Kiley, Wieland, Moreland, Meyer, Schulz, Williston, Arvey (ex officio).

Board of Health

Dr. Herman N. Bundesen, President; Dr. Louis E. Schmidt, Secretary; Dr. Francis A. Dulak, Prof. Edwin O. Jordan, Mr. Harry J. Reynolds, Members.

2251 Milk and Milk Products

Standards and Requirements

Section

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(For purposes of explanation:

The ordinance is printed in heavy-face type as used in this sentence.

The rules and regulations are printed in light-face type as used in this sentence.

The public health reasons are printed in smaller light-face type as used in this sentence.)

3082. Definitions.) The following definitions shall apply in the interpretation and the enforcement of this article:

(A) Milk. Milk is hereby defined to be the lacteal secretion obtained by the complete milking of one or more healthy cows, excluding that obtained within fifteen days before and five days after calving, or such longer period as may be necessary to render the milk practically colostrum free, which contains not less than eight and one-half per cent. of milk solids-not-fat, and not less than three and one-fourth per cent of milk fat.

Public health reason.—The food value of milk depends upon its solids-not-fat and its milk-fat content (which, in turn, determine the content of proteins, carbohydrates, minerals and certain vitamins). If either of these is reduced below the range for normal market milk, the food value is reduced. Practical experience shows that three and one-fourth per cent milk fat and eight and one-half per cent solids-not-fat are reasonable minima for mixed-herd milk. Colostrum tends to produce intestinal disturbances in children, and milk is apt to contain colostrum if obtained within fifteen days before or five days after calving.

Satisfactory compliance.—This definition shall be deemed to have been satisfied:

(1) When there is no evidence that cows are milked within fifteen days before or five days after calving, and when no colostrum can be detected in the milk.

(2) When the milk-fat content, as determined by the Babcock, Mojonnier, or other recognized test, is three and one-fourth per cent or more.

(3) When the milk solids-not-fat content is eight and one-half per cent or more, as determined from the milk-fat percentage and the specific gravity, or by other approved methods, provided that failure to satisfy this requirement shall be regarded as merely presumptive evidence of watering, and that this evidence shall be confirmed by cryoscope, refractometer, or other approved test for added water.

(4) When the milk is clean, free of sediment, and has a normal flavor, odor and appearance.

(5) When the milk comes from cows which have been properly fed.

(B) Milk Fat Or Butter Fat. Milk fat or butter fat is the fat of milk.

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(C) **Sweet Cream; Sour Cream.** Sweet cream is a portion of milk which contains not less than eighteen per cent milk fat, and the acidity of which is not more than 0.20 per cent, expressed as lactic acid. Sour cream is a portion of milk which contains not less than eighteen per cent milk fat, and the acidity of which is more than 0.20 per cent, expressed as lactic acid.

(D) **Skimmed Milk.** Skimmed milk is milk which has a milk fat content of less than three per cent.

(E) **Milk Beverage Or Skimmed-Milk Beverage.** A milk beverage or a skimmed-milk beverage is a food compound or confection consisting of milk or skimmed milk, as the case may be, to which has been added a syrup or flavor consisting of wholesome ingredients.

(F) **Buttermilk.** Buttermilk is the product which remains when fat is removed from milk or cream in the process of churning. It contains not less than eight and one-half per cent of milk solids-not-fat.

(G) **Cultured Buttermilk:** Cultured buttermilk is the product resulting from the souring of treatment, by a lactic acid culture, or other treatment approved by the board of health, of milk or milk products. It contains not less than eight and one-half per cent of milk solids-not-fat, and shall be pasteurized before adding the culture.

(H) **Vitamin D. Milk.** Vitamin D milk is milk the vitamin D content of which has been increased by a method and in an amount approved by the board of health.

(I) **Reconstituted Or Recombined Milk and Cream.** Reconstituted or recombined milk and cream are products resulting from the recombining of milk constituents with water or other combining substance in accordance with the rules and regulations of the board of health, and which comply with the standards for milk fat and solids-not-fat as defined herein.

All milks and milk products used in reconstituted or recombined milk and cream shall conform to the requirements set forth in the ordinance and rules and regulations of the board of health pertaining to milk and milk products.

No person shall reconstitute or recombine milk, or any milk products to be served or sold, without first obtaining the approval and permission of the board of health.

(J) **Milk Products.** Milk products shall be taken to

mean and include sweet cream, sour cream, vitamin D. milk, buttermilk, cultured buttermilk, skimmed milk, milk beverages, and skimmed-milk beverages, and such other products as may, from time to time, be designated by the board of health.

This item shall include all milk products which are used in the manufacture of ice-cream and other frozen confections of a similar nature, such as butter, milk powder, skimmed-milk powder, and cream powder, condensed, concentrated and evaporated milk and skimmed milk, and other milk products designated from time to time by the board of health.

(K) Pasteurization. The terms "pasteurization," "pasteurized," and similar terms shall be taken to refer to the process of heating every particle of milk or milk products to a temperature of not less than 144° F., and holding at such temperature for not less than 30 minutes in pasteurization apparatus approved by the board of health, provided that approval shall be limited to apparatus which requires a combined holder and indicating thermometer temperature tolerance of not more than 1½° F., as shown by official tests with suitable testing equipment, and provided that such apparatus shall be operated as directed by the board of health and so that the indicating thermometers and the recording thermometer charts both indicate a temperature of not less than 144° F., continuously throughout the holding period. Provided that nothing contained in this definition shall be construed as disbaring any other process which has been demonstrated as of at least equal efficiency and is approved by the board of health.*

(L) Adulterated Milk And Milk Products. Any milk or a milk product not conforming with the requirements of composition and sanitation required by this article, or to which any substance has been added, except as may be specifically permitted by the board of health, shall be deemed adulterated and misbranded.

Any milk or milk product shall be deemed to have been misbranded if it is not labeled in accordance with the requirements of Section 3090 of this article.

2253 (M) Milk Producer. A milk producer is any person who owns or controls one or more cows, a part or all of the milk or milk products from which is sold.

* For the discussion of the enforcement of this definition, see Section 3093, Item 16p, Grade A Pasteurized Milk.

(N) **Milk Distributor.** A milk distributor is any person who offers for sale, or sells, or delivers to another, any milk or milk products for human consumption.

(O) **Dairy or Dairy Farm.** A dairy or dairy farm is any place or premises where one or more cows are kept, a part or all of the milk or milk products from which is sold or delivered.

(P) **Milk Plant and Milk Receiving Station.** A milk plant is any place, or premises, or establishment where milk or milk products are collected, handled, processed, stored, bottled, pasteurized, or prepared for distribution. A milk receiving station is any place, premises, or establishment where milk is collected, handled, or processed preparatory to pasteurization elsewhere.

(Q) **Board of Health.** The term, "board of health," shall mean the board of health of the City of Chicago, or its authorized representative.

(R) **Average Bacterial Plate Count, Average Reduction Time, and Average Cooling Temperature.** Average bacterial plate count shall be taken to mean the logarithmic average of the bacterial plate counts of the last four consecutive samples, taken upon separate days. Average reduction time shall be taken to mean the arithmetic average of the reduction times of the last four consecutive samples, taken upon separate days. Average cooling temperature shall be taken to mean the arithmetic average of the temperatures of the last four consecutive samples, taken upon separate days.*

(S) **Inspection Period.** The inspection period shall be such period of time as the board of health may designate, within which compliance with this article and the rules and regulations of the board of health shall be determined for all milk and/or milk products, provided that the inspection period shall in no case exceed six months.

(T) **Bactericide.** The term "bactericide" shall be taken to mean any bactericidal substance or process approved by the board of health.

There are several bactericides which may be used in

* For a discussion of bacterial plate count and reduction time, see Section 3092 of these regulations. For a discussion of cooling temperature, see Section 3093, Items 23r and 17p.

complying with this ordinance. These consist generally of calcium hypochlorite, sodium hypochlorite, or certain chloramine solutions.

Calcium hypochlorite.—Calcium hypochlorite (chlorinated lime) is a chemical compound used as a disinfectant.

A satisfactory method of preparation is to make a smooth, watery paste of 12 ounces of calcium hypochlorite, adding the water in very small quantities at first, and bringing the final volume of this stock solution to one gallon. This solution should be kept tightly stoppered in a cool, dark place. An earthenware or brown glass jug is a satisfactory container. One tablespoonful of this stock solution to each gallon of rinse water will make a solution of an effective strength, which will not be so strong as to injure hands or udders. A fresh stock solution should be made every ten days, and any old solution thrown away or used to deodorize privies, etc.

A highly concentrated calcium hypochlorite is available which is more stable and more soluble than ordinary chlorinated lime.

Sodium hypochlorite.—Solution of sodium hypochlorite are on the market under various trade names. These have usually been found to be as strong as the stock chlorinated lime solutions when prepared as above directed. Unless otherwise instructed by the inspector, these commercial preparations of sodium hypochlorite should be made up in the proportion of one tablespoonful per gallon of rinse water.

Testing of Chlorine Solutions.

Every milk producer or distributor who uses a chlorine compound as a bactericide shall provide himself with a testing device described herein, or such other similar device approved by the board of health, for the determination of available chlorine. Chlorine solutions in use shall contain at least 50 parts per million of available chlorine, as shown by the following test. Where the chlorine 2254 solution is used as a spray, the excess solution which

* The above instructions assume that the strength secured will be roughly one hundred parts per million or more. It is believed that, as a matter of precaution, no chlorine solution should be used after its strength has been reduced to less than 50 parts per million.

runs off or collects in the equipment shall contain at least 50 parts per million.*

The testing outfit consists of two test tubes approximately 7/16 inch by 4 inches, one of which contains orthotolidin. The other is fitted with a medicine dropper and is used for testing the chlorine solution. It is etched at the 2 c. c. and 5 c. c. levels so as to make possible the dilution of the solution to be tested to two-fifths of its original strength, thus diluting an original solution of 50 parts per million or more to one of 20 parts per million or more, which, as above stated, is the critical point for the formation of the precipitate when hypochlorites are tested.

Before any tests are made with the apparatus, the medicine dropper should be tested to determine whether it delivers drops of the proper size. To do this, simply count the number of drops required to fill to the first mark of the testing tube. If the number required lies between 30 and 50, the dropper is satisfactory. If not, discard it and secure one of the proper size.

Directions for the Chlorine Test.

(1) Rinse the testing tube and its dropper thoroughly with clean water.

(2) Fill the testing tube to the lower mark with the chlorine solution to be tested, using the dropper for this purpose. (Avoid including floating particles.)

(3) Fill to the second mark with clean water, using the dropper for this purpose.

(4) Add one drop of orthotolidin.

(5) Hold the upper part of the testing tube firmly with one hand and tap the lower end of it sharply 50 times with one or two fingers of the other hand.

(6) If, in the case of hypochlorites, reddish or brownish particles separate out within five minutes, the solution tested contains at least 50 p. p. m. of available chlorine.

* This test has been devised by the Office of Milk Investigations of the United States Public Health Service and measures that part of the chlorine which is quickly available.

The test makes use of the fact that when the proper amount of orthotolidin is added to a chlorine solution containing 20 parts per million or more, a precipitate is formed, except that in the case of certain chloramines the solution becomes cloudy at chlorine concentrations having a two-minute bactericidal strength equivalent to at least the bactericidal strength of 20 parts per million of sodium hypochlorite.

If, in the case of certain chloramines, the solution becomes cloudy within five minutes, the solution tested has a bactericidal strength for a two-minute exposure equivalent to at least the bactericidal strength of 50 p. p. m. of sodium hypochlorite.**

Other bactericides.—The board of health will not permit the use of any other form of bactericide until it has satisfied itself by its own or other official tests that they are satisfactory for use in connection with milk handling, and that they are of adequate strength. Under no circumstances shall formaldehyde or other preservatives be used.

(U) Person. The word "person" shall mean "person, firm, corporation, or association."

(V) Goat Milk, Ewe Milk. Goat milk, ewe milk; are the fresh, clean, lacteal secretions, free from colostrum, obtained by the complete milking of healthy animals other than cows, properly fed and kept, and conform in name to the species of animal from which they are obtained, and shall comply with all of the requirements of this article and the rules and regulations of the board of health, with reference to pasteurized or certified milk, except for such modifications as the board of health may deem appropriate.

3083: The Sale of Adulterated or Misbranded Milk or Milk Products Prohibited.) No person shall produce, sell, offer, or expose for sale, or deliver, or have in possession with intent to sell or deliver, any milk or milk products, all or any part of which is ultimately delivered or consumed in the city of Chicago, which is adulterated or misbranded.

All milk and milk products, which do not comply with the requirements as set forth in the rules and regulations of the board of health and/or the ordinances of the City of Chicago, may be condemned, and the shipper, producer or distributor, in whose custody or possession said milk or milk products are at the time of condemnation, shall cause the same to be destroyed or returned to the producer or shipper thereof, within such time as may be designated by the board of health.

** In order to determine whether a certain commercial preparation is strong enough for dairy use when mixed as directed on the label, mix a portion as directed on the label, then dilute half and half, and test for 50 parts per million by means of the above-described test. If a precipitate appears, the directions upon the label may be approved. Otherwise, such larger quantity of the stock solution should be used by the dairyman as will give a satisfactory test.

If at the end of such time said milk or milk products have not been destroyed or returned, said milk or milk products shall be destroyed by the board of health; and the permit of the possessor revoked.

3084. Permit to Sell. Vehicles to Bear Permit Number—Revocation of Permit—Hearing.) It shall be unlawful for any person to bring into or receive into the city of Chicago, for sale, or to sell, or to offer for sale therein, or to have in storage where milk or milk products are sold or served, any milk or milk product defined in this 2255 article, who does not possess a permit from the board of health, and on whose vehicle there does not appear in a conspicuous place the name and address of the milk distributor and the permit number and such other identification in such manner as required by the board of health.

Such permit may be revoked by the board of health upon the violation by the permittee of any of the provisions of this article or of any of the rules and regulations of the board of health, or in any emergency when, in the judgment of the board of health, the milk or milk product handled by the permittee has or may become a public health menace, or in any case in which the permittee refuses the board of health the right of entrance to any dairy farm, milk plant, or vehicle, or other place where milk or milk products are kept or stored, for the purpose of inspection or the collection and examination of samples; provided that the permittee shall, after abiding by such revocation, upon request have the right of a hearing before the board of health.*

There shall appear upon each outer side of every vehicle used for the transportation of milk or milk products a notice containing the words, "board of health permit;" and, immediately thereafter, the permit number of the distributor, in figures not less than three inches high and one and one-half inches wide; also the name and place of business of the distributor, and the word "milk" and/or the words "milk products" in a prominent place, and in letters not less than six inches high, and of such other dimensions as are approved by the board of health.

All milk and milk products distributors shall furnish

* This section permits the board of health to prosecute any persons who begin distributing milk without notifying said board, and thus without being inspected. The periodic inspection principle of the ordinance makes it unnecessary that the permit be renewed annually.

the board of health with the names and addresses of all itinerant milk and milk products vendors to whom milk is delivered, and with the names and addresses of all milk producers, plants and receiving stations supplying said distributors with milk or milk products.

3085. Sale of Milk or Milk Products—License Required.) No person shall sell or offer for sale, expose for sale, dispose of, exchange or deliver, or with the intent so to do have in his possession, care, custody or control, milk or milk products for human food, without having obtained a license for that purpose.

3086. Application—Separate License Required for Each Place of Business—Change of Location.) Any person desiring to be licensed, in accordance with and pursuant to the provisions of this article, shall make application in writing therefor to the board of health.

Such application shall conform to the general provisions of this article relating to applications for licenses, and the rules and regulations of the board of health, and shall state the name and address of the applicant and the location of the place at which it is desired or intended to carry on such business; it shall also contain a description of the business which is to be engaged in, the description and number of vehicles to be used by the applicant (if any), and such further information which may be required by the board of health.

The board of health, upon receipt of such application, shall investigate or cause to be investigated, the place of business described in such application, and the vehicles, methods and equipment intended to be used by such applicant.

If such applicant, the place of business, and such vehicles, methods and equipment are found by said board of health to be in a sanitary condition and fit for the uses and purposes to which they are intended to be put, they shall transmit such application to the Mayor with the approval thereon, and the Mayor shall thereupon issue or cause to be issued to such applicant, upon the payment by him to the city collector of the license fee as therein provided, a license attested by the city clerk, authorizing such applicant to carry on, engage in and conduct the business of distributor of milk or milk products in the city, in the manner and at the place designated in such application, and to employ in and about such business the number of wagons or other vehicles designated and described in such

application, for and during the period for which such license is issued.

No license issued hereunder shall entitle or authorize the licensee named therein to carry on, engage in or conduct the business of distributor of milk or milk products in any place or places other than that described and set out in such license, and a separate license fee shall be 2256 paid for each and every place at which such business is carried on, engaged in or conducted; provided, however, that if any licensee shall desire to carry on, engage in or conduct the business of distributor of milk or milk products at more than one place of business and employ the same wagons or other vehicles at each place of business, he shall not be required to pay more than one license fee to the City of Chicago for each such wagon or other vehicle.

If any person licensed under the provisions of this article, shall sell, transfer, assign or change the location of his place of business, application for a transfer or assignment of license shall be made to the board of health, and no such business so sold, transferred, or assigned, shall be conducted or carried on at such location until such application shall have been made and approved by the board of health as herein provided.

3087. License Fees.) Every person selling or disposing of milk or milk products shall annually pay a license fee as hereinafter provided.

Every person selling, offering for sale, exposing for sale, exchange or delivery, or disposing of milk or milk products in and from any milk plant or milk receiving station, shall pay an annual license fee graded according to the size of such establishment, as evidenced by the number of wagons or motor vehicles run, as follows:

Running not more than one wagon or motor vehicle	\$ 5.00
Running 2 to 3 wagons or motor vehicles...	10.00
Running 4 to 5 wagons or motor vehicles...	20.00
Running 6 to 10 wagons or motor vehicles..	40.00
Running 11 to 15 wagons or motor vehicles	60.00
Running 16 to 25 wagons or motor vehicles.	100.00
Running 26 to 35 wagons or motor vehicles.	140.00
Running 36 to 50 wagons or motor vehicles.	200.00
Running 51 to 75 wagons or motor vehicles.	300.00
Running 76 to 100 wagons or motor vehicles.	400.00
Running over 100 wagons or motor vehicles.	500.00

Such person shall also pay an additional annual license fee for each vehicle used for the delivery or sale of milk or milk products, as follows:

One horse wagon or not to exceed one ton truck or motor vehicle.....	\$10.00
Two horse wagon or truck in excess of capacity of one ton and not in excess of two tons	15.00
Truck in excess of capacity of two tons....	25.00

Provided, however, that distributors of milk operating independently of any licensed depot, or in connection with or from any milk plant or receiving station located outside of the city of Chicago, and delivering, selling or offering milk or milk products for sale in the city of Chicago, shall pay an annual license fee of fifteen dollars for each wagon, and twenty-five dollars for each motor vehicle operated in the city of Chicago; and provided, further, that every person selling principally milk or milk products in bulk at wholesale, either as dealers, jobbers, brokers or agents, shall pay an annual license fee of fifty dollars for each establishment from which such business is conducted, and an additional fee for each vehicle operated, as follows:

One horse wagon or not to exceed one ton truck or motor vehicle	\$10.00
Two horse wagon or truck in excess of capacity of one ton and not in excess of two tons	15.00
Truck in excess of capacity of two tons....	25.00

Every person selling, offering for sale, exposing for sale, exchange or delivery, or disposing of milk or milk products; which is not intended to be consumed on the premises, in and from any milk plant, such as a milk depot, store, stand, booth, market place, or any building or enclosure or establishment of a similar character, shall pay an annual license fee of five dollars.

2257 3088. Vehicles to Display License Emblem on Windshield.) No person shall sell, offer for sale, or convey, or cause to be conveyed on or in any wagon or other vehicle or to be delivered therefrom any milk or milk products, unless such wagon or other vehicle shall have affixed to the inside glass part of the windshield of such vehicle, a license emblem on which shall be stamped a number corresponding to the license number of the milk

distributor, by whom such vehicle is used, and also the words "Chicago" and "Milk," together with the year for which the milk distributor using such vehicle is licensed. Such license emblem shall be obtained from the city clerk at the time the license is issued.

It shall be the duty of the city clerk to change annually the predominant background color of such license emblem. Said emblem shall be impervious to weather and incapable of being removed without being destroyed. A license to distribute milk or milk products, as provided for under the provisions of this article shall be void and of no effect unless such license emblem described in this article shall be posted in the manner provided for.

No license emblem shall be permitted to remain affixed to the windshield of a milk vehicle after the period for which such emblem was issued has expired.

3089. Revocation of License.) All licenses granted pursuant to this article may at any time be revoked by the Mayor for violations of the provisions hereof, or the rules and regulations of the board of health, or for any other good and sufficient cause.

3090. Labeling and Placarding.) All bottles, cans, packages, and other containers enclosing milk or any milk product defined in this ordinance shall be plainly marked or labeled with the following and only such other information as may be designated by the board of health:

1. The name of the contents as given in the definitions in this ordinance.

2. The word "pasteurized" only if the contents have been pasteurized.

3. The word "raw" only if the contents are raw.

4. The name and address of the producer if the contents are raw, and the name and address of the plant at which the contents were pasteurized if the contents are pasteurized.

5. In the case of vitamin D milk, the designation "vitamin D milk," and such other information as may be required by the board of health.

6. The permit number.

7. On all cans, bottles, and other containers of pasteurized or certified milk, the words "to be sold" and thereafter the day of the week on which the milk or milk product is to be sold to the final consumer, the height of the letters of the day of the week to be not less than 3/16 inch on

bottle caps, and not less than 5/8 inch on tags attached to each container when contained in cans.

8. On all cans and other containers of milk and milk products received by pasteurization plants from receiving stations, the day of the week received by the receiving station.

9. The word "milk" shall not appear or be used on any label, cap, receptacle, or container for any products except those defined in this article as milk, skimmed milk, buttermilk, cultured buttermilk, vitamin D milk, and any other products designated by the board of health.

All milk produced shall be delivered daily to a milk receiving station or a pasteurization plant.

All milk received by pasteurization plants must be pasteurized within such time of production or receipt by the receiving station as may be designated by the rules and regulations of the board of health.

Every restaurant, cafe, soda fountain, or other establishment serving milk or milk products in bulk shall display at all times, in a place designated by the board of health, a notice approved by the board of health, giving all information required in this section, and such other information required by the board of health.

Milk only is to be delivered from a dairy farm to a receiving station or pasteurizing plant, and all milk produced for pasteurization shall be delivered daily to a milk receiving station or a pasteurizing plant. All milk received by pasteurization plants must be pasteurized 2258 within 24 hours of production or receipt by the receiving station.

Cans, tanks, or similar receptacles of milk or milk products delivered in or into the city of Chicago shall be sealed with an unbroken wire or metal seal, at the place where such milk or milk products are placed in such cans or receptacles, except where expressly exempted by the board of health.

The original tags or labels shall remain on all cans, tanks, or similar containers until the milk or milk products in such containers are emptied therefrom for processing or sale.

All caps or labels on cans, bottles and other containers of pasteurized milk, cream and skimmed milk shall include the words "before noon" after the words "to be sold."

A proof-print or sketch of the bottle cap or cover, or of the can tags and labels showing the size and arrangement of

the lettering thereon, shall be submitted to and approved by the board of health.

When milk or milk products are enclosed in bottles or glass jars, the name or address blown into such bottle or glass jar, or otherwise indicated thereon, shall not be other than or different from that which is indicated on the cover or cap thereof.

Milk products placed into storage or frozen, for periods exceeding seven days, shall be stored or frozen in the original container and bear the original tags or labels on such containers. A record shall be furnished to the board of health of the place and date of storage, kind and amount of product, and a record shall also be furnished of the time said milk product is removed for use. Dried milk and milk products and butter shall bear the board of health permit number stenciled on the outside and inside surfaces of the barrel, tub or other container, in letters at least one inch in height, and butter shall also bear said mark stamped on the top surface of the butter in each tub or container in the following letters and figures: C. B. H. (permit number).

3091. Inspection of Dairy Farms and Milk Plants—Report to Be Posted.) At least once during each inspection period, the board of health shall inspect all dairy farms and all milk plants whose milk or milk products are intended for consumption within the city of Chicago. In case the board of health discovers the violation of any item of sanitation, it shall make a second inspection after a lapse of such time as it deems necessary for the defect to be remedied, and the second inspection shall be used in determining compliance with this article. Any violation of any item of this ordinance on two consecutive inspections shall be cause for immediate revocation of permit.

One copy of the inspection report shall be posted by the board of health in a conspicuous place upon an inside wall of one of the dairy farm or milk plant buildings, and said inspection report shall not be removed by any person except the board of health. The original copy of the inspection report shall be filed with the records of the board of health.*

* The first sentence of this section should not be taken to imply that one inspection per inspection period is a desirable frequency. It should, instead, be regarded as the legal minimum. In actual practice, it is desirable to inspect every dairy farm at least two or three times during each inspection period and every milk plant at least every two weeks. As often as possible, inspection of farms should be made during milking time, and of plants while pasteurization or processing is in progress.

A dairy or milk plant may immediately have its permit revoked without waiting for the end of the inspection period if two successive inspections disclose one or more violations of the requirements. Even if the two violations do not refer to the same item of sanitation, this shall nevertheless be cause for immediate revocation of permit.

The inspector should post one copy of the inspection report at the dairy or milk plant, and said report shall not be removed, altered or defaced by any person except the board of health.**

Every inspection report shall be receipted for upon the place designated on the face thereof, except that if inspections are made in the absence of the proprietor or his agents, the inspection report should be posted nevertheless, but, in addition, a written notification should be mailed to said proprietor.

3092. Examination of Samples.) During each inspection period, a number of samples of milk or milk products from each dairy farm and each milk plant, as designated by the rules and regulations of the board of health, shall be taken on separate days and examined by the board of health. Samples of milk and/or milk products from stores, cafes, soda fountains, restaurants, and other places where milk or milk products are sold shall be examined as often as the board of health may require. Bacterial plate counts shall be made in conformity with the latest standard methods recommended by the American Public Health Association, or any other method approved by the board of health. Examinations may include such other chemical and physical determinations as the board of health may deem necessary for the detection of adulteration, these examinations to be made in accordance with the latest standard methods of the American Public Health Association and the Association of Official Agricultural Chemists, or any other method approved by the board of health. Bacterial plate counts, reductase test, and cooling temperature results shall be given to the producer or distributor concerned as soon as determined if said results fall without the limits prescribed. Samples may be taken by the board of health at any time prior to the final delivery of the milk or milk products. All proprietors of stores, cafes, restaurants, soda fountains, and other similar

** The milk-house wall of the farm and the wall of the plant office are effective locations.

places shall furnish the board of health, upon its request, with the name of the distributor from whom their milk and/or milk products are obtained. Bioassays of the vitamin D content of vitamin D milk shall be made when required by the board of health in a laboratory acceptable to it for such examinations.

Samples of milk and milk products shall be paid for at the market price upon request.

Four or more samples of a given milk supply shall be examined before attempting to determine the average bacterial quality of the milk. It is required that at least four samples be taken from each supply during each inspection period.

Bacterial Plate Counts and Reductase Tests

It is required that grade A pasteurized and certified milk fall within certain limits of average bacterial plate counts or average reduction time as determined by the reductase test.

Public health reason.—It is widely accepted that the bacterial plate count of milk is an index of the sanitary quality of milk. A high count does not necessarily mean that disease organisms are present, and a low count does not necessarily mean that disease organisms are absent; but a high bacterial plate count does mean that the milk has either come from diseased udders, has been milked or handled under undesirable conditions, or has been kept warm enough to permit bacterial growth. This means, in the first two cases, that the chances of infection have been increased and, in the last case, that any infection which has reached the milk has been permitted to grow to more dangerous proportions. In general, therefore, a high count means a greater likelihood of disease transmission.

The collection of milk samples.—Milk samples will be collected so as to represent the condition of the milk when reaching the consumer, milk plant, or receiving station.

Samples, when taken, must, without fail, be kept below 50° F. until plated. This will require that the samples be packed in ice, or placed in a suitable refrigerator, until examined.

In case of bottled milk, a pint or quart bottle shall be taken at random by the inspector and, except in the case of cover or hood caps, the top covered with a suitable cover so as to assure the dairyman that the milk will not be

contaminated en route to the laboratory by the hands of the inspector or by the ice in the sample case. The sample form must be filled out in triplicate by the inspector at the time the sample is taken, and the corresponding number sticker attached to the bottle. A copy of the form shall be left with the person who is in attendance at the time the sample is taken. The inspector shall also fill out a laboratory report card, to be turned in with his sample to the laboratory, upon which the laboratory results shall be entered. The results of the tests shall then be recorded on the sample form, one copy remaining in the board of health files, and the second copy being returned to the inspector. The person from whom the sample was taken may secure the results of such examination, upon request, by presenting his copy of the sampling form.

Reporting Bacterial Plate Counts

For all except known high-count milk or very low-count milk the dilutions used shall be 1-100 and 1-1000; for the high-count milk 1-1000 and 1-10000, and for the very low-count 1-10 and 1-100. The following special rules for reporting counts shall be used:

(1) When the higher plate count is more than twice the lower, record the lower count.

(2) When the higher plate count is not more than twice the lower, apply the Standard Method rules for counting.

(3) In case one plate cannot be counted because of a spreader covering more than half the plate, the result is to be reported as unsatisfactory unless the count of the other plate is within the limit required by these regulations.

* For the collection of bulk samples at pasteurizing plants or at their country cooling stations, the following procedure is recommended. Five ounces of stock chlorine solution are added to a five-gallon can of water. A long-handled dipper is kept in this solution for a few moments and then used to stir the milk and collect the sample. It may be used without further bactericidal treatment for taking samples from any number of cans from the same producer, but must be re-treated before proceeding to sample milk from the next producer. The small amount of chlorine carried into the milk on the dipper will not affect its bacterial count. The cans of milk should be well stirred before the samples are taken, in order that the samples may be representative. Sample bottles should be of not less than four-ounce capacity.

In lieu of the above method, sterile pipettes may be used for collecting samples.

The number of routine samples which must be examined makes the use of more than two dilutions per sample impracticable. For this reason, it has become general practice to make only two dilutions.

(4) Report bacterial plate counts to the nearest 1,000, unless the count exceeds 100,000, in which case report to the nearest 10,000, or unless the count exceeds 1,000,000, in which case report to the nearest 100,000.

(5) Plates showing no growth shall be reported as unsatisfactory.

2260 Averaging bacterial plate counts in determining compliance*

The averaging of bacterial plate counts under this ordinance shall be done by the logarithmic method.**

* In determining the bacterial quality of milk supplies, the average of the last four consecutive counts or reductase hours is used because less than this number has been found by experience not to give a dependable picture of the bacteriological condition of a milk supply.

** How to find the average bacterial plate count by logarithms.—The logarithms of all bacterial plate counts from 1,000 to 100,000,000 are given directly in the following table. The logarithms should be entered opposite the counts in the milk control ledger. To find the average bacterial plate count, find the average of the logarithms and then find the bacterial plate count in the table which is opposite the average logarithm. (See table.)

Following is an example:

Counts	Logarithms
35,000	4.54
11,000	4.04
9,000	3.95
95,000	4.98
	<hr/> 4) 17.51

4.38 = average logarithm

4.38 in the table is opposite 24,000 which is, therefore, the average bacterial count.

If it is found that the average logarithm occurs opposite more than one bacterial plate count in the table, take the lowest bacterial count as the average.

Exhibit "A."

TABLE TO BE USED IN COMPUTING LOGARITHMIC AVERAGES OF
BACTERIAL PLATE COUNTS

1,000—3.00	60,000—4.78	330,000—5.52	960,000—5.98
2,000—3.30	61,000—4.79	340,000—5.53	970,000—5.99
3,000—3.48	62,000—4.79	350,000—5.54	980,000—5.99
4,000—3.60	63,000—4.80	360,000—5.56	990,000—5.99
5,000—3.70	64,000—4.81	370,000—5.57	1,000,000—6.00
6,000—3.78	65,000—4.81	380,000—5.58	1,100,000—6.04
7,000—3.85	66,000—4.82	390,000—5.59	1,200,000—6.08
8,000—3.90	67,000—4.83	400,000—5.60	1,300,000—6.11
9,000—3.95	68,000—4.83	410,000—5.61	1,400,000—6.15
10,000—4.00	69,000—4.84	420,000—5.62	1,500,000—6.18
11,000—4.04	70,000—4.85	430,000—5.63	1,600,000—6.20
12,000—4.08	71,000—4.85	440,000—5.64	1,700,000—6.23
13,000—4.11	72,000—4.86	450,000—5.65	1,800,000—6.26
14,000—4.15	73,000—4.86	460,000—5.66	1,900,000—6.28
15,000—4.18	74,000—4.87	470,000—5.67	2,000,000—6.30
16,000—4.20	75,000—4.88	480,000—5.68	2,100,000—6.32
17,000—4.23	76,000—4.88	490,000—5.69	2,200,000—6.34
18,000—4.26	77,000—4.89	500,000—5.70	2,300,000—6.36
19,000—4.28	78,000—4.89	510,000—5.71	2,400,000—6.38
20,000—4.30	79,000—4.90	520,000—5.72	2,500,000—6.40
21,000—4.32	80,000—4.90	530,000—5.72	2,600,000—6.42
22,000—4.34	81,000—4.91	540,000—5.73	2,700,000—6.43
23,000—4.36	82,000—4.91	550,000—5.74	2,800,000—6.45
24,000—4.38	83,000—4.92	560,000—5.75	2,900,000—6.46
25,000—4.40	84,000—4.92	570,000—5.76	3,000,000—6.48
26,000—4.42	85,000—4.93	580,000—5.76	3,100,000—6.49
27,000—4.43	86,000—4.93	590,000—5.77	3,200,000—6.51
28,000—4.45	87,000—4.94	600,000—5.78	3,300,000—6.52
29,000—4.46	88,000—4.94	610,000—5.79	3,400,000—6.53
30,000—4.48	89,000—4.95	620,000—5.79	3,500,000—6.54
31,000—4.49	90,000—4.95	630,000—5.80	3,600,000—6.56
32,000—4.51	91,000—4.96	640,000—5.81	3,700,000—6.57
33,000—4.52	92,000—4.96	650,000—5.81	3,800,000—6.58
34,000—4.53	93,000—4.97	660,000—5.82	3,900,000—6.59
35,000—4.54	94,000—4.97	670,000—5.83	4,000,000—6.60
36,000—4.56	95,000—4.98	680,000—5.83	5,000,000—6.70
37,000—4.57	96,000—4.98	690,000—5.84	6,000,000—6.78
38,000—4.58	97,000—4.99	700,000—5.85	7,000,000—6.85
39,000—4.59	98,000—4.99	710,000—5.85	8,000,000—6.90
40,000—4.60	99,000—4.99	720,000—5.86	9,000,000—6.95
41,000—4.61	100,000—5.00	730,000—5.86	10,000,000—7.00
42,000—4.62	110,000—5.04	740,000—5.87	11,000,000—7.04
43,000—4.63	120,000—5.08	750,000—5.88	12,000,000—7.08
44,000—4.64	130,000—5.11	760,000—5.88	13,000,000—7.11
45,000—4.65	140,000—5.15	770,000—5.89	14,000,000—7.15
46,000—4.66	150,000—5.18	780,000—5.89	15,000,000—7.18
47,000—4.67	160,000—5.20	790,000—5.90	16,000,000—7.20
48,000—4.68	170,000—5.23	800,000—5.90	17,000,000—7.23
49,000—4.69	180,000—5.26	810,000—5.91	18,000,000—7.26
50,000—4.70	190,000—5.28	820,000—5.91	19,000,000—7.28
51,000—4.71	200,000—5.30	830,000—5.92	20,000,000—7.30
52,000—4.72	210,000—5.32	840,000—5.92	30,000,000—7.48
53,000—4.72	220,000—5.34	850,000—5.93	40,000,000—7.60
54,000—4.73	230,000—5.36	860,000—5.93	50,000,000—7.70
55,000—4.74	240,000—5.38	870,000—5.94	60,000,000—7.78
56,000—4.75	250,000—5.40	880,000—5.94	70,000,000—7.85
57,000—4.76	260,000—5.42	890,000—5.95	80,000,000—7.90
58,000—4.76	270,000—5.43	900,000—5.97	90,000,000—7.95
59,000—4.77	280,000—5.45	950,000—5.98	100,000,000—8.00

Reductase test.—When the reductase test is used, the procedure shall be as follows: Follow Standard Methods of Milk Analysis except that samples are to be examined at the end of each hour, but not beyond eight hours. The reduction time shall be expressed as the number of elapsed full hours when decolorization is first observed. Samples not reduced at the end of eight hours are to be reported as reduced in nine hours. For purposes of determining bacterial quality, the simple arithmetic average of the last four consecutive samples is to be used.

3093. Kinds of Milk—Requirements.) From and after the date of passage of this ordinance, no milk or milk products shall be sold in the city of Chicago except grade A pasteurized milk and milk products and certified milk and milk products. Requirements for these kinds of milk and milk products shall be as follows:

Grade A Pasteurized Milk and Milk Products

Grade A pasteurized milk and milk products are milk and milk products which conform with the rules and regulations of the board of health for grade A pasteurized milk and milk products.

Requirements for Raw Milk To Be Pasteurized.—Grade A pasteurized milk, before pasteurization, is milk the average bacterial plate count of which, as determined under section 3082 (R) and 3083 of this article, does not exceed 200,000 per cubic centimeter, or the average reduction time of which is not less than six hours, and which is produced upon dairy farms conforming with all of the following items of sanitation.

Item 1r.—Cows.

For diseases other than tuberculosis, such tests and examinations as the board of health may require shall be made at intervals and by methods prescribed by it, and any diseased animals or reactors shall be disposed of as it may require.

All cattle on farms producing milk shall be healthy and free from contagious and infectious diseases, and from any physical condition which might render them unfit for the production of milk for human consumption. Each animal in the herd, six months of age and older, shall be certified by veterinarians under the direction of the state and fed-

eral live-stock authorities, or such veterinarians as may be designated or approved by the board of health of the City of Chicago. Herds certified in such manner shall be eligible for the production of milk when they have been examined and certified within one year prior to the time 2261 when milk has been accepted therefrom. When herds are located in federal modified accredited areas the time may be extended to three years at the discretion of the board of health.

The examination of all animals shall be of such a character as to enable the veterinarian to determine whether they are free from communicable diseases of all kinds or any condition which might render them unfit for the production of milk for human consumption, to which he shall be able to certify. Such test or tests may be repeated whenever deemed necessary or advisable by the board of health.

No animal, six months of age or older, shall be added to a herd unless such animal has been examined by a veterinarian, and a certificate issued therefor as herein specified.

All cattle upon examination, found to be diseased or in a condition which might render them unfit for the production of milk for human consumption by the authorized veterinarian or representatives of the board of health, shall be immediately excluded from the herd, and any milk from such animals shall be withheld from human consumption.

There shall be filed with the board of health a current certificate covering all tests made by veterinarians with the records of each animal properly identified. Such certificate shall be on file with the board of health before milk shall be offered for shipment, and during the entire period of production.

Item 2r.—Dairy Barn—Lighting.

A dairy or milking barn shall be required, and such sections thereof where cows are milked shall have at least three square feet of light area for each cow in the barn at any one time, and when necessary shall be provided with adequate supplementary artificial light.

Public health reason.—Adequate light makes it more likely that the barn will be clean, and that the cows will be milked in a cleanly manner.

- Satisfactory compliance.—Glazed windows, doors, and other unobstructed openings in the milking barn amount

ing in total area to three square feet per cow and reasonably evenly distributed, shall be considered satisfactory compliance with this item. In computing light space half-credit shall be given for openings obstructed by an overhanging roof. The covering of windows or door openings by boards or other non-transparent material shall be deemed as reducing the light space in proportion to the area covered. No credit shall be given for openings into enclosed covered spaces, or for doors which the inspector finds closed at any time.*

Adequate artificial lighting must be provided for night milking. The inspector shall consider the requirement of adequate artificial light to be satisfied if the milking portion of the barn is so lighted that cleaning and milking operations can be efficiently performed.

Item 3r.—Dairy Barn—Air Space, Ventilation, Etc.

Such sections of all dairy barns where cows are kept or milked shall have at least 400 cubic feet of air space per cow in the barn at any one time, and shall be well ventilated.

Public health reason.—This item is required in order to avoid overcrowding and to insure proper ventilation.*

Satisfactory compliance.—The ventilation part of this item shall be deemed to have been satisfied when, in the judgment of the board of health, conditions are such as to result in sufficient fresh air at all times.

Stanchions shall be required for the maximum number of cows in the milking barn at any one time, and shall be of such width as to prevent overcrowding, and not less than thirty-six inches wide (does not apply to goat barns) or such greater width as may be required for the size of cow in the stanchion; and shall be of such length that the droppings will tend to fall into the manure gutter.

* In computing window area, find the area in square feet of each light opening, divide by two, such of these areas as are obstructed by boards or overhanging roof; total all areas thus found, and divide the total by the maximum number of cows in the barn at any one time. The result is the effective window area.

* Compute the floor area by multiplying the length by the width of the section of the barn where the cows are kept or milked. Multiply this result by the average height of the roof or ceiling in this section. (If the roof is gabled or ridged, this height should be taken as the average of the side wall and ridge pole heights.) To find the air space per cow, divide the total air space thus found by the number of cows.

If this quotient is less than 400, the barn does not meet the specifications for grade A pasteurized milk. In order to determine the maximum number of cows which a barn of given size will permit, divide the total air space by 400.

Stanchions should be preferably at least 42 inches apart and equipped with metal or other suitable dividers or partitions, and shall be required on all farms which may hereafter be approved to produce milk for sale in Chicago.

Windows opened for ventilation purposes should preferably be tilted back from the bottom, permitting the top to be open, the sides being boxed, in order to prevent a direct draft on the cows.

Item 4r.—Dairy Barn—Floors.

The floors and gutters of such parts of all dairy barns in which cows are milked shall be constructed of concrete or other impervious and easily cleaned material approved by the board of health, shall be graded to drain properly, and shall be kept clean and in good repair. No horses, pigs, fowl, calves, etc. shall be permitted in parts of the barn used for milking.

4r(a)—Floor Construction.

Public health reason.—Floors constructed of concrete or other impervious materials can be kept clean more easily than floors constructed of earth, or similar materials, and are therefore more apt to be kept clean.

2262 The floors should preferably be of concrete, but may be of other similar impervious material approved by the board of health. Cork bricks or creosoted wood blocks, and well-constructed wood floors, so long as these are impervious to water and permit no pooling of liquids or wash-water, are approved.

Earth floors are not approved because they are not deemed impervious.

Other portions of the barn shall be separated from the milking portion by railings or partitions. If such other portions of the barn are not kept clean, and free from dust and objectionable odors, tight partitions are required; in fact, tight partitions are recommended for all cases.*

* It is recommended, but not required, that feed troughs be of smooth-surfaced concrete in order to facilitate bactericidal treatment when necessary.

Although it has become general practice among modern dairymen to build milking-barn floors of concrete, some dairymen still hesitate to take this step because of the fear of possible injury to their cattle. This objection is answered by the experience of the great number of dairymen who milk on concrete floors. The danger of injuries is not great enough to counterbalance the many advantages of a well-drained, impervious barn floor. The floor should have an untrowelled surface in order to prevent slipping. When necessary to keep the cattle in the milking barn, the floors may be bedded in order to prevent discomfort.

Concrete floors in barns under construction or reconstruction should have curbs where the floor joins the walls. These are desirable in order to promote cleanliness in the angles of the floor and walls, and to avoid rotting of wall sills and studs. Gutters shall be required of ample capacity to care for the accumulation of manure between milking periods. The size of the gutter shall be such as to promote cleanliness and improve drainage. A gutter 8 inches deep and 16 inches wide is preferred, and shall be required of all farms which may hereafter be approved to produce milk for sale in Chicago.

Driveways behind cows may be acceptable in place of the gutter where the depth of the drop is ample and the floor is properly graded.

4r(b)—Floor Cleanliness.

Public health reason.—A clean floor reduces the chances of contamination of the milk or milk pails during milking. The presence of other animals increases uncleanness.

Satisfactory compliance. This item shall be deemed to have been satisfied if the milking-barn floor is free of accumulations of filth or litter except such as have accumulated since the beginning of the last milking period; provided that the floor must be clean at the beginning of each milking period; and if horses, pigs, fowl, etc., are kept out of the milking barn.

When floors of milking barns are bedded, bedding containing more than one milking's collection of manure shall be considered as equivalent to unclean floors.

Dairymen whose barns are provided with water under pressure should scrub the floors after each milking with a stiff-bristled brush. In barns in which water under pressure is not available, the floors may be brushed dry and limed. In the latter event, care should be exercised to prevent caking of the lime. If clean floors are not maintained by this method the inspector should require cleansing with water.

Item 5r.—Dairy Barn—Walls and Ceilings.

The walls and ceilings of all dairy barns shall be white-washed once each year or painted once every two years, or oftener if necessary, or finished in a manner approved by the board of health, and shall be kept clean and in good repair. In case there is a second story above that part of

the barn in which cows are milked, the ceiling shall be tight. If the feed room adjoins the milking space, it shall be separated therefrom by a dust-tight partition provided with self-closing doors.

Public health reason.—Whitewashed, painted, or properly finished walls and ceilings encourage cleanliness, and whitewash is a disinfectant as well. Tight ceilings and feed rooms reduce the likelihood of dust and trash getting into the milk and thus increasing its bacterial count.

Satisfactory compliance.—This item shall be deemed to have been satisfied if the walls and ceilings

(1) Have been whitewashed or finished with cold-water paint once every year or oftener if necessary; or

(2) Have been painted once every two years, or oftener if necessary; or

(3) Have interior surfaces of finished concrete, concrete block, brick, tile, galvanized iron, plaster, or similar material which may be accepted without painting; joints and rafters of the roof structure shall not be required to be whitewashed or painted, but must be kept clean; the use of wall board attached to the rafters to make the ceiling tight shall be accepted; and

(4) Are in good condition, with ceiling tight if there is second story above the milking portion of the barn, and with a dust-tight partition, provided with self-closing doors, separating the milking space from the feed room.

Barns newly constructed of wood shall be required to be painted or whitewashed when completed.*

Item 6r.—Dairy Barn—Cow Yard.

All cow yards shall be graded and drained as well as practicable and kept clean.

2263 6r(a)—Grading and Draining of the Cow Yard.

Public health reason.—The cow yard is interpreted

* Whitewash formula.—The following formula for whitewash has given satisfaction:

Unslacked lime	2 pecks
Spanish whiting (barium sulphate)	½ pound
Salt	1 peck
Powdered glue	1 pound
Rice flour	3 pounds

Add water so that it can be applied easily and thoroughly. For full painting and whitewashing instructions, see U. S. Department of Agriculture Farmers' Bulletin No. 1452.

to be that enclosed or unenclosed area in which the cows are apt to congregate, approximately adjacent to the barn. This area is, therefore, particularly apt to become filthy with manure droppings and, being nearest the barn, may be a public health menace through the breeding of flies. The grading and drainage of the cow yard as far as practicable are required because wet conditions are conducive to fly breeding, make it difficult to keep manure removed, and make it difficult to keep the cows clean.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) When the cow yard has been graded and drained as well as local conditions will permit. Low places must in all cases be filled in with hard material. Approaches to barn door and to stock tank should preferably be of concrete.*

(2) When the wastes from the barn and milk room are not allowed to pool in the cow yard.

6r(b)—Cleanliness of the Cow Yard.

Public health reason.—If manure and barn sweepings are allowed to accumulate in the cow yard fly breeding will be promoted and the cows will, because of their habit of lying down, be more apt to have manure-soiled udders.

Satisfactory compliance.—This item shall be deemed to have been satisfied if the cow yard is kept clean. Swine should not be permitted in the cow yard. The stock-watering tank shall be kept clean at all times.

Item 7r.—Manure Disposal.

All manure shall be removed and stored or disposed of in such manner as best to prevent the breeding of flies therein or the access of cows to piles thereof.

Public health reason.—Improper manure disposal induces the breeding of flies, which are considered capable of transmitting infection to milk or milk utensils.

Satisfactory compliance.—This item shall be deemed to have been satisfied when the manure droppings are re-

* The most satisfactory method of conducting milking-barn wastes and wash water beyond the cow yard limit is the construction of a drain. The drain should preferably be lined with concrete, tile, or brick, although a well-kept open earth ditch will be accepted. Open drains are recommended because of the danger of frequent clogging of closed drains, unless closed drains of adequate diameter and slope can be provided.

moved from the barn floor between each milking and the cow yard is kept clean, and manure is

- (1) Spread upon the fields, or
- (2) Stored for not more than four days in a pile on the ground surface, and then spread upon the field, or
- (3) Stored for not more than seven days in an impervious floored bin or upon an impervious curbed platform, and then spread or stored in a tight, screened, and trapped manure shed, or
- (4) Fly breeding is minimized by methods equivalent to the recommendations of the U. S. Department of Agriculture, Bureau of Dairying, Milk Inspector Letter No. 104, May, 1926.*

Requirements (1) to (4) shall apply only during the fly-breeding season. Manure, if stored in a pile, shall be stored in such a way as to be inaccessible to the cows, and not in close proximity to the barn, and in such manner that a nuisance will not exist. Storage of manure at least 30 feet from the barn is preferred.

*"Any program to eradicate flies from dairies should begin with the elimination of breeding places. The premises should be cleared of piles of manure and other refuse, such as spoiled silage and accumulations of wet and decaying hay and straw. Even with the utmost care flies cannot be entirely prevented from breeding, and it is necessary to destroy those which do appear from undetected breeding places and the premises of neighbors. In carrying on this work, traps properly constructed and baited, and the judicious use of sprays will be found helpful and not exorbitantly expensive."

"The baited traps are used for catching the flies which do not bite but get their nourishment from foods they can suck through their elongated mouth parts. Most of these are the common house flies. The spray is used to kill or repel the biting type of flies that live on blood, which they obtain by piercing the skins of animals. Stable and horn flies are examples of this type."

"Last year the Bureau of Dairying, on its experimental farm at Beltsville, Md., with the cooperation of the Bureau of Entomology, made effective use of the fly-fighting measures outlined above. The premises were kept as free as possible from accumulations of manure. Box stalls were cleaned and scraped regularly. As a rule, manure was not allowed to accumulate near the buildings for more than three or four days, and an effort was made to have the immediate premises entirely freed from accumulations of manure at least once each week. Cylindrical traps like those described in Farmers' Bulletin 734 were set as soon as the first flies appeared. They were baited with black strap molasses from sugar cane diluted with three or four parts of water. The bait was removed once a week and the traps emptied when the accumulation of dead flies was so great as to reduce seriously the light under the trap. Before emptying the traps the living flies were killed by steaming the traps for about a minute in a steam sterilizer. During the season the ten traps used caught 86 gallons, or approximately a half billion flies. The milk room was practically free from flies throughout the whole season."

"In order to protect the cattle as much as possible from the horn and

Item 8r.—Milk House or Room—Construction.

There shall be provided a milk house or milk room for the handling and storage of milk and/or milk products and the washing, bactericidal treatment, and storage of milk apparatus and utensils. The milk house or room (a) shall be provided with a tight floor constructed of concrete or other impervious material, in good repair, 2264 and graded to provide proper drainage; (b) shall have walls and ceilings of such construction as to permit easy cleaning, and shall be well painted or finished in a manner approved by the board of health; (c) shall be well lighted and ventilated; (d) shall have all openings effectively screened including outward-opening, self-closing doors to prevent the entrance of flies; and (e) shall be used for no other purposes than those specified above, shall not open directly into a stable, or gasoline engine room, or into any room used for domestic purposes, shall have water piped into it, shall have proper provision for adequate hot water which shall be so located and con-

stable flies a spray was used. It was thought best to apply a spray which would kill the flies rather than merely repel them.

"A good killing spray may be made by suspending 5-10 pounds of unground, half-closed pyrethrum flowers (inclosed in a double-thickness cheesecloth bag) in a mixture of 9 gallons of kerosene and 4 quarts of fuel oil of 28-32 gravity. The mixtures should stand 24 hours before being used. It may not kill all the flies immediately, but many flies that are hit will fly away and eventually die. Fuel oil is the ordinary low-grade oil that is burned in furnaces for heating, and usually can be bought from fuel dealers. The "28-32" gravity does not mean "specific gravity," but is a commercial term used in the oil business. If 28-32 oil is not available, use any furnace oil. Lubricating oils, including waste oils from engines should not be used. When only small quantities of spray are required, concentrated pyrethrum extracts may be bought. These need only the addition of kerosene and the fuel oil to make them effective.

"To apply this extract an air-pressure sprayer was used which held about one gallon and could easily be operated with one hand. In spraying for horn flies an attempt was made to catch them in a cloud of vapor as they swarmed up after the first spray struck them, and this was very effective. They were easily killed by the pyrethrum extract. In applying this spray, a nozzle which will produce a very fine vapor should be used. This is facilitated by using plenty of pressure.

"In spraying for stable flies, which are in most cases found sucking blood from the cows' legs, the spray was shot directly on them, usually with telling effect. Since the major part of the spray is kerosene, care was taken not to cover the cattle with it unnecessarily, and they were not curried or brushed, or turned out in the hot sun immediately after being sprayed. By observing these precautions no trouble was experienced from blistering.

"Although in both seasons the horn flies had appeared in considerable numbers before the spray was used, their numbers were appreciably reduced after a week of daily spraying, and they were easily kept under control the rest of the season."

ducted as to prevent any contamination of the milk or of cleaned equipment.*

8r(a)—Floors (Concrete or Other Impervious Material, Graded to Drain).

Public health reason.—A well-drained concrete or other impervious floor promotes cleanliness.

Satisfactory compliance.—This item shall be deemed to have been satisfied when the floor consists of concrete, brick, tile, or other composition material approved by the board of health and laid so as to be impervious and to drain properly.

Drain pipes should be carefully set before the floor is laid. A grade of one-fourth to one-half inch per foot gives ample floor drainage. The finish of the floor should be as smooth as possible, and the junction of the floors and walls should be curbed and the joint rounded to avoid angles for collecting and holding dirt. If the milk house is of frame construction, all walls (including partitions) should be made of the floor material up to a height of 10 to 12 inches.

Milk-house floors of brick or concrete, in which depressions have been worn so that liquids stand in them, are unsatisfactory. Smooth floors, the drainage of which is not good, are unsatisfactory.**

8r(b)—Walls and Ceiling (Painting or Other Approved Finish, Easily Cleaned).

Public health reason.—Construction which permits easy cleaning promotes cleanliness.

Satisfactory compliance.—This item shall be deemed to have been satisfied when all parts of the walls and ceiling, except light openings, are composed of

(1) A lining of smooth-dressed, matched lumber, well painted with light colored washable paint, or

(2) Tile, cement blocks, bricks, concrete or cement plaster, provided that the surfaces and joints are smooth, or

(3) Finished in some other manner approved by the board of health.

* The place in which utensils are washed shall be considered part of the milk room and all requirements of this section shall apply thereto.

** Such conditions can usually be remedied by a new covering of rich cement or fine aggregate concrete, preferably at least two inches thick to avoid frequent repairs.

8r(c)—Lighting and Ventilation.

Public health reason.—Ample light promotes cleanliness, and proper ventilation reduces likelihood of odors.

Satisfactory compliance.—This item shall be deemed to have been satisfied if the window space is glazed and is not less than 10 per cent. of the floor area and the light is reasonably evenly distributed, and if the milk house is adequately ventilated in the judgment of the inspector. A hooded chute ventilator shall be provided, the cross-section area of which is not less than fifty square inches. A ventilator having a cross-section area of 100 square inches is preferred and shall be required on all farms which may hereafter be approved to produce milk for sale in Chicago. Doors and windows shall be kept closed during dusty weather.

Artificial lighting is also important. The milk house must be well lighted for periods when there is not sufficient natural light. The inspector shall consider the milk house to be adequately provided with artificial light if it is equipped with at least one 25-watt electric light or its equivalent for each 100 square feet of floor area, reasonably evenly distributed. An ordinary one-inch-wide flat-wick oil lamp in good condition shall be considered the approximate equivalent of one 25-watt electric light. A gasoline or gas mantle lamp in good condition shall be considered the equivalent of four 25-watt electric lights.

8r(d)—Screening.

Public health reason.—Effective screening tends to prevent the presence of flies, which are a public health menace. Flies may infect the milk with disease germs, which may multiply and become sufficiently numerous to spread disease to the consumers.

Satisfactory compliance.—This item shall be deemed to have been satisfied if all openings are effectively screened whenever flies are evident, and outer doors open outward and are self-closing.

Broken, torn, or poorly fitted screens shall not be accepted as satisfactory compliance.*

All open drains through the wall of the milk house shall be properly screened, trapped, or plugged.

* Fly exclusion can be made more effective when screen doors open outward and are provided with closing devices such as spring hinge, pulley and weight, coil spring, or similar measures. Poorly fitted doors can be provided with flaps of canvas, linoleum, or other material.

Screen cloth, tacked on the outside of the window frames so as to cover openings completely, shall be approved.†

2265 Screen cloth coarser than 16-mesh to the inch shall not be used.*

Screened milk-house extensions used for storage of utensils shall be approved as part of the milk house if provided with a tight roof and not exposed to dust. If such extensions are exposed to dust they shall be made dust-proof.

8r(e)—Miscellaneous Requirements.**

The milk house or room, must, in order to comply with this section, be a separate room used for no other purpose than milk handling and equipment cleaning and bactericidal treatment of equipment, and these operations may not be conducted elsewhere except as subsequently noted.***

When the milk house is a part of or is attached to the barn or dwelling, this part of item 8r shall be deemed to have been satisfied if there is an outside entrance but no entrance through the partition wall, or, if entered from the barn, the entrance is through self-closing doors having a ventilated vestibule between them and so arranged that both doors will not be open at the same time.

The factors and conditions which shall determine the location of the milk house are:

- (1) Availability of water.
- (2) Transportation of every bucketful of milk from the barn.
- (3) Drainage.
- (4) Contaminating surroundings.

. Each milk house shall have proper provisions for ade-

† If the screens are exposed to stress of any kind, light bars of wood across them will prevent breaks or tears.

* The screen cloth of doors should be protected by strips of wood or by a piece of hardware cloth placed across the bottom panel, and at the level where the hands or elbows are generally placed in opening the door.

** When milk is handled in a room used for sleeping or domestic purposes or which opens directly into a room so used, the milk is apt to be exposed to infection from persons other than regularly employed milk handler.

*** If the milk room opens directly into the barn, so that a door is the only barrier between it and the barn, flies are certain to enter the milk room.

quate hot water. The piping of water into the milk house shall be required.

The waste water from the washing of utensils and the scrubbing of the milk house must be led away, and the surroundings of the milk room should be clean and dry.****

Item 9r.—Milk House or Room, Cleanliness and Flies.

The floors, walls, ceilings, and equipment of the milk house or room shall be kept clean at all times. All means necessary for the elimination of flies shall be used.

Public health reason.—Cleanliness and freedom from flies in the milk room reduce the likelihood of contamination of the milk.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) The floors, walls, windows, shelves, tables, and equipment are clean, and

(2) The milk room is free from trash and articles not used in the milk-room work, such as empty cartons, paste-board boxes, old papers, feed sacks, broken crates, etc., and

(3) Very few or no flies are present.

The milk-house floors should be flushed and swept immediately after the operations incidental to each milking are completed. Tables should be scrubbed daily. Unless the boards of table tops are tight-fitting they should be separated by spaces at least $\frac{1}{2}$ -inch wide. The walls and ceiling should be flushed down as often as necessary.

Rubbish shall be kept removed from the milk house.

Coagulated grease shall not be permitted to accumulate in corners and crevices of the washing vat or between the vat and the wall.

Flies which enter the milk house in spite of good screen-

**** For these reasons the milk house should preferably be located where the natural drainage is good. Wastes from the milk room shall be disposed of as indicated for barn wastes under item 6r (a).

The dairyman may be guided by the following suggested approximate milk house dimensions.

Suggested Floor Space of Milk House

Milk output in gallons:	Existing milk houses:	Future milk houses:
Under 20:	10' x 8'	12' x 10'
20-50:	10' x 10'	12' x 12'
50-100	10' x 12'	12' x 14'
Over 100:	10' x 14'	12' x 16'

See Farmers' Bulletin No. 1214.

ing should be killed daily by means of fly paper, fly traps, or fly-killing sprays or powders, or other means.

This section forbids the location of gas engines in the milk room.

Item 10r.—Toilet.

Every dairy farm shall be provided with one or more sanitary toilets conveniently located, and constructed, operated, and maintained in accordance with the recommendations of the board of health so that the waste is inaccessible to flies, and does not pollute the surface soil or contaminate any water supply.

Public health reason.—The organisms of typhoid fever, dysentery, and colitis are present in the body wastes of persons sick with these diseases. In the case of typhoid fever well persons (carriers) may discharge the organisms in their body wastes. If a toilet is not fly tight and so constructed as to prevent overflow, infection may be carried from the excreta to the milk by flies, or through the pollution of water supplies or streams in which the cows wade.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

2266 (1) There is one or more flush toilets connected to a sewer system or to a residential sewage disposal plant and constructed and operated in accordance with plans and instructions of the board of health, or

(2) A chemical toilet or pit privy is provided, constructed and operated in accordance with plans and instructions of the board of health.

(3) There is no evidence of human defecation or urination about the dairy premises except in the toilets provided for these purposes.

(4) Any other requirements of the board of health are satisfied.

Provided further, that (1) and (2) shall include at least the following minimum standards:

A. Flush toilets.—At dairy farms provided with water under pressure, flush toilets are preferable and their installation shall conform to the board of health plumbing regulations which shall include (a) water pressure at all times sufficient to fill the toilet reservoir; (b) toilet bowl of non-absorbent material, rim-flush, properly vented and

trapped, and with tight joints; (c) toilet placed in a well lighted and ventilated room which does not open directly in to the milk room; (d) fixtures protected against freezing; (e) any other requirement of the board of health.

Satisfactory disposal of the effluent from such toilets should preferably be into a sanitary sewer system, otherwise treatment in a septic tank should be required and the effluent discharged into the soil. If proper soil is not available, the effluent shall be disposed of in accordance with the rules of the board of health.

The following shall be considered defects in flush toilet installations: (a) insufficient water pressure or volume; (b) leaky plumbing; (c) clogged sewers as evidenced by overflowing toilet bowl; (d) broken tile lines or clogged disposal field; (e) dairy cows having access to the effluent below the sewer or disposal field discharge; (f) the effluent coming to the surface of the ground in the absorption field; (g) toilet-room floor soaked with urine or other discharges; (h) offensive odors or other evidence of lack of cleanliness; (i) violation of any other requirements of the board of health.

B. Chemical toilets.—In areas where pit toilets might menace water supplies, or where a sufficient volume of water for the operation of flush toilets is not available, the chemical toilet may be accepted provided it (a) has a receiving tank of acid-resisting material with an opening easily accessible for cleaning; (b) has a bowl of nonabsorbent material sufficiently elevated above the receiving basin to avoid splashing the user; (c) has the tank and bowl vented with at least a three-inch screened pipe, preferably of cast iron, which extends at least two feet above the roof line; (d) has the tank charged at proper intervals with chemicals of a bactericidal nature and concentration; (e) is placed in a well-lighted and ventilated room which does not open directly into the milk room or dairy barn; (f) has an effective method of final disposal including burning, burial, or leaching vat or cesspool where such cesspool will not endanger any water supply.

The following shall be considered defects in a chemical toilet installation: (a) violation of any of the above requirements; (b) disagreeable odors indicating too infrequent charging with chemicals, or inadequate concentration of chemicals in the charge; (c) evidence of improper disposal of the tank contents; and (d) lack of cleanliness in the toilet compartment and room.

C. Pit toilets.—For satisfactory compliance the following specifications shall apply:

(a) Location.—Pit toilets shall not be installed in cavernous or loosely stratified formations, nor in close proximity to shallow wells. The location of the pit shall be consistent with the requirements of item 11r. The pit should preferably be at least 50 feet distant from any well, spring, or other source of domestic water supply and, if possible, upon ground sloping from the water supply. A distance of less than 50 feet will be permitted only upon specific approval of the board of health.

(b) The pit.—The pit shall have an original minimum capacity of not less than 60 cubic feet and shall be so excavated that the cribbing, when inserted, shall make a firm, uniform contact with the earth walls on all sides.

(c) Pit cribbing.—The pit cribbing shall extend not less than three inches above the original ground line, and to the full depth of the pit except in rock formation or in very tight soil, in which cases the lower section of the cribbing may be omitted.

(d) Pit curbing.—In case of concrete or metal-slab privies, an additional collar of reinforced concrete shall be constructed around and just outside the top of the pit cribbing on which to set the slab. This collar shall be at least three inches wide and extend down at least four inches into firm earth and up to the top of the pit cribbing. In the case of wood-slab privies, if such a concrete collar is not constructed, there shall be constructed in lieu thereof a mudsill of at least 2-inch by 4-inch material around and just outside the top of the pit cribbing. This sill 2267 shall be at least as long and as wide as the privy floor or pit cover and shall be set on well-tamped earth.

(e) Pit Mound.—An earth mound shall be banked by tamping the excavated earth in layers around the pit curbing and level with the top of the curbing for a distance of not less than 18 inches, then outward to meet the surrounding ground surface with a slope not greater than 1 in 3.

(f) Seat riser.—The bench or seat riser shall have an inside clearance of not less than 18 inches to the front and rear walls and not less than 12 inches to the side walls. The top of the seat shall be not less than 12 nor more than 16 inches from the floor. The seat riser shall be so con-

structed and bonded with the floor as to prevent seepage through the riser onto the floor.

(g) Seat cover.—The seat opening shall be covered with a lid, hinged so as to provide a clearance of not less than three inches horizontally between the back of the seat opening and the lid when raised. The lid shall be so constructed and installed that when closed it will exclude flies.

(h) Vent pipe.—The pit shall be vented from the riser to a point outside the building by a flue or vent pipe having a cross-sectional area of not less than seven square inches. The joints shall be tight and the opening screened with 16-mesh copper screen wire.

(i) Floor and riser.—The floor and riser shall be built of impervious material or tongue-and-grooved lumber, in a manner to exclude flies. The floor and bench, or riser, for a single unit shall cover an area of at least 16 square feet.

(j) Superstructure.—The house shall be rigidly constructed and shall provide privacy and protection from the elements. Except where climatic conditions prohibit, the building shall be ventilated by leaving a 4-inch opening at the top of the walls just beneath the roof. The building should preferably be covered with a roof having a pitch of at least 1 in '4 and with an overhang of not less than 5 inches front, 13 inches back, and 9 inches on each side, with a facing board not less than 4 inches wide extending around the entire margin of the roof.

(k) Drain board.—In order to deflect rainfall from the house foundation, a drain board at least 30 inches wide shall be placed at an angle of approximately 45 degrees at the base of the building and in such manner as to extend beyond the edge of the roof; or, in lieu thereof, the roof may be provided with a gutter with the discharge end extending not less than 18 inches beyond the edge of the roof.

(l) Maintenance and operation.—The following shall be considered defects in pit-toilet installations; (a) evidence of caving around the edges of the pit; (b) signs of overflow or other evidence that the pit is full; (c) seat covers open; (d) broken, perforated, or unscreened vent pipe; (e) uncleanness of any kind in the toilet building; (f) toilet room opening directly into milk room or dairy barn; and (g) evidence of light entering pit except through seat when seat cover is raised; (h) violation of any other requirement of the board of health.

Item 11r.—Water Supply.

The water supply for the milk room and dairy barn shall be properly located, constructed, and operated and shall be easily accessible, adequate, and of a safe sanitary quality.

Public health reason.—A dairy farm water supply should be accessible so as to encourage its use in cleansing and cooling operations; it should be adequate so that cleansing and rinsing will be thorough; and it should be of safe, sanitary quality in order to avoid the infection of milk utensils.

A slightly polluted water supply used in the rinsing of dairy utensils and containers may be far more dangerous than a similar water supply used for drinking purposes only. Bacteria grow much faster in milk than in water, and the severity of an attack of a given disease depends largely upon the size of the dose of disease germs taken into the system. Therefore, a small number of disease organisms consumed in a glass of water from a slightly polluted well may possibly result in no harm, but if left in a milk vessel which has been rinsed with the water may, after several hours growth in the milk, result in a case of disease.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) When the water supply is easily accessible to the milk house and the dairy barn.

(2) When the water supply is, in the judgment of the inspector, adequate in quantity to promote cleanliness, and proper cooling.

(3) When no surface or cistern water supply is used except under conditions approved by the board of health.

(4) When the source of water supply is a public water supply approved by the board of health, or a spring, dug well, driven well, bored well, or drilled well which complies with the following specifications; provided that items (c), (f), and (j) shall be required only for water-supply structures which are installed subsequent to the first inspection based upon these requirements:

At least one inspection shall be made each inspection period to determine whether the location, construction, and operation of the supply comply with the specifica-

tions which follow. Bacteriological results on samples 2268 of water shall comply with the U. S. Treasury Standards for drinking water.

(a) Privies, etc., near wells.—Every well or spring shall be located in such manner that neither underground nor surface contamination from any cesspool, privy, or other possible source of pollution can reach such water supply. The horizontal distance from any such possible source of pollution shall be not less than 50 feet, except as provided under (b). If bacteriological examinations or other evidence indicate pollution, the distance shall be increased or the location of the water supply changed to meet these specifications.

(b) Sewers near wells.—No floor drain, soil pipe, main drain, or other pipe which is directly connected to a storm or sanitary sewer, or through which water or sewage from any source may back up, shall be located nearer than 10 feet to any well. All pipes and drains or parts thereof through which sewage or waste water flows, or into which sewage or waste water may back up; which are located within 50 feet of any such water supply or more than 10 feet from a well, shall be constructed of cast iron pipe with leaded joints.

(c) Sewers near water lines.—No water pipe shall be closer than 10 feet, measured horizontally, to any sewer or drain which may at any time contain polluted water, provided that water pipes and sewers or drains may cross each other at distances less than 10 feet if the water pipe is above the sewer or drain, and if such parts of the sewer or drain lying within 10 feet horizontally of the water pipe are constructed of cast iron pipe with leaded joints.

(d) Leakage from toilets and sewers.—No toilet, sewer, soil pipe or drain shall be located over or where leakage therefrom can reach any water storage basin, reservoir, source of water supply, or pump room.

(e) Pits near water supply.—There shall be no pit or unfilled space below ground surface level, any part of which is within 10 feet of such water supply.

(f) Well casing or lining.—All that part of the suction pipe or drop pipe of any well within 10 feet of and below the ground surface shall be surrounded by a watertight casing pipe extending above the ground, platform, or floor surface, as the case may be, and covered at the

top as herein provided. If a well has a lower casing disconnected from the upper casing, required as aforesaid, such lower casing shall be cut off at least 10 feet below the ground surface, and the top of the casing shall be closed with a suitable water-tight cover and shall be covered with a compact earth fill so that there will be no depression at the ground surface above the casing top; provided that a dug well, in lieu of such casing pipe, may be provided with a substantial, water-tight lining of concrete, vitrified tile with outer concrete lining, or other suitable material. Such lining shall extend down for a distance of at least 10 feet and shall extend up to the well platform or pump room floor with a water-tight connection. In such case the platform or floor shall have a suitable sleeve pipe surrounding the suction pipe or drop pipe and projecting above as herein provided for a casing pipe.

(g) Cover on floor.—Every well, spring or other structure used as a source of water, or for the storage of water, shall be provided with a water-tight cover or pump room floor constructed of concrete or similarly impervious material so as to provide proper drainage from the cover or floor and so as to prevent contamination of the water supply. Such cover or floor shall be constructed so that there shall be no copings, parapets, or other features which may prevent proper drainage, or by which water can be held on the cover. Well casings shall project at least six inches above the top of this cover or floor, except as noted in (h), and the cover or floor shall slope away from a well casing or suction pipe in all directions, and shall be at least six inches above the ground surface at the outside edges.

(h) Pump-head and base.—Every hand-operated pump shall have the pump-head closed by a stuffing box or other suitable device to exclude contamination from the water chamber. The pump base shall be of solid one-piece recessed type of sufficient diameter and depth to admit the well casing as hereinafter provided. The top of the casing of every well equipped with such a pump shall project into the base of the pump at least one inch above the bottom thereof, and at least one inch above the level of the platform on which the pump rests.

(i) Power-pump base.—Every power-pump shall have a solid, water-tight, metal base without openings, to form a cover for the well, recessed to admit the well casing, and the well casing shall project into the base at least one inch

above the bottom thereof, and at least one inch above the level of the foundation on which the pump rests, which in turn shall be at least five inches above the top of the cover or floor or, in lieu of such base, a separate water-tight, metal cover, into which the casing projects in like manner, may be provided; provided that the base or cover may have an air vent constructed as hereinafter prescribed.

(j) Drainage.—No well head, well casing, pump, pumping machinery, valve connected with the suction pump, or exposed suction pipe, shall be located in any pit, room, or space extending below ground level, or in any room or space above the ground which is walled in or otherwise enclosed so that it does not have free drainage by gravity to the surface of the ground; provided that this shall not apply to a dug well properly constructed, lined, and covered as herein prescribed.

(k) Manholes.—Manholes may be provided on dug wells, reservoirs, tanks, and other similar features of water supplies. Every such manhole shall be fitted with a water-tight collar or frame having edges which project at least two inches above the level of the surrounding surface, and shall be provided with a solid, water-tight cover having edges which overlap and project downward at least two inches around the outside of the frame. The cover shall be kept locked at all times except when necessary to open the manhole.

(l) Vent openings.—Any reservoir, well, tank, or other structure containing water for any such water supply may be provided with vents, overflows, or water-level control gauges, which shall be constructed so as to prevent the entrance of birds, insects, dust, rain, snow, or other contaminating material. Openings on vents shall be not less than two feet above the floor of a pump room or the roof or cover of a reservoir. Openings on vents located on other structures shall be not less than two feet above the surface on which the vents are located.

(m) Airlift systems.—The air intake for any airlift system or mechanical aerating apparatus shall be at least six feet above the floor surface if indoors, and ten feet above the ground if out-of-doors. The air intake shall be so constructed as to prevent the entrance of birds, insects, dust, rain, snow, or other contaminating material. Every airline system shall be equipped with effective oil traps, tanks, or filters to prevent oil from entering the water.

(n) Lubrication of pump bearings. Pump bearings situated in any well below the pump-room floor shall be lubricated with water taken from within the well, or from the reservoir or distribution system supplied with water from the original source of the water supply, or from another supply approved by the board of health.

(o) Priming of power pumps.—Water for priming pumps on any water system shall be taken directly from the reservoir or distribution system which is supplied with water from the original source of the water supply or from another supply approved by the board of health. Priming devices shall be so constructed as not to expose the water to dust, drippings, or other sources of contamination.

(p) Priming of hand pumps; buckets.—No hand-operated type of pump or cylinder which requires priming shall be used. No pail and rope, bailer or chain bucket systems shall be used.

(q) Disinfection of water supplies.—New water supplies and water supplies which may have become contaminated accidentally or otherwise shall be thoroughly disinfected before being placed in use. Disinfection shall consist of passing a chlorine solution through all of the units until a chlorine residual of at least one p. p. m. is in evidence at all of the outlets, and the water supply meets the requirements of the board of health.

Item 12r.—Utensils—Construction.

All containers or other utensils used in the handling, storage, or transportation of milk or milk products must be made of nonabsorbent material and of such construction as to be easily cleaned, and must be in good repair. Joints and seams shall be soldered flush. All milk pails shall be of a small-mouth design approved by the board of health.

Public health reason.—Milk containers and other utensils not having flush joints and seams, smooth, easily cleaned, and accessible surfaces, and not made of durable, not readily corrodible metal are apt to harbor accumulations in which undesirable bacterial growth is produced.

Milk pails of small-mouth design, sometimes known as the "hooded milk pail," decrease the chance of hairs, dust, chaff, and other undesirable foreign substance getting into the milk at the time of milking.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All containers, utensils, and other equipment are constructed of heavy-gauge material with a not readily corrodible surface, of a shape which will make cleaning easy, and with all joints and seams soldered flush; and

(2) All containers, utensils, and other equipment are in good repair, free of breaks and corroded places; and

(3) All milk pails are of an approved small-mouth design, and

(4) All other requirements of the board of health are satisfied.

The use of agateware or unsubstantial milking pails is not acceptable.*

The opening of the small-mouth milking pails should be not more than one-third of the area of the top of an open-top pail of the same size. Some patented small-mouth pails, which are designed to hold a strainer cloth, will be approved provided the construction does not include wire screen cloth, and the pails meet the other specifications of this item.

Milking into small cups and pouring into pails will not be approved. If milking machines are used and stripping is done by hand, small-mouth pails shall be used.

All milk cans should preferably have umbrella-type covers.

2270 Item 13r.—Utensils—Cleaning.

All containers and other utensils used in the handling, storage, or transportation of milk and milk products must be thoroughly cleaned after each usage.

Public health reason.—Milk cannot be kept clean in contact with unclean milk vessels and utensils.

Satisfactory compliance. This item shall be deemed to have been satisfied when all containers, utensils, milking machine pails and tubing, etc., used in the handling, storage, or transportation of milk and milk products, are thoroughly cleaned after each milking. Unless utensils are clean to the sight and touch, this item shall be deemed to have been violated.

* The enamel of agateware is subject to chipping, and many unsubstantial pails rarely have the seams filled with solder, and in addition rust easily.

Item 14r.—Utensils—Bactericidal Treatment.

All containers and other utensils, used in the handling, storage, or transportation of milk or milk products, shall between each usage be treated with steam, hot water, or chlorine in a manner approved by the board of health.

Public health reason.—Mere cleansing of containers and utensils does not insure that all disease organisms will have been removed or destroyed. Even very small numbers thus remaining may grow to dangerous proportions in the milk, since many kinds of disease bacteria grow rapidly in milk.

For this reason, all milk containers and utensils must be treated with a bactericidal agent between each usage.

Satisfactory compliance.—This item shall be deemed to have been satisfied if all milk containers, utensils, strainer cloths, etc., have been, in an approved manner:

(1) Exposed for at least 15 minutes to at least 170° F., or for at least five minutes to at least 200° in a steam cabinet; or

(2) Exposed to a jet of live steam or 180° F. water for at least one minute; or

(3) Exposed to a chlorine solution of approved strength for at least two minutes (for approved strength refer to definition of bactericide); or

(4) Immersed in hot water at 170° F. or more for at least two minutes.

The efficiency of the process shall be such as to produce cans having a residual bacterial plate count of not more than one per c. c. of capacity.

Any equipment touched by the inspector shall be again subjected to bactericidal treatment before being used.*

Treatment with chlorine solution.—Containers and utensils may be treated with chlorine solution without special apparatus by filling the rinsing compartment of the washing vat with water containing chlorine solution of standard

* Cabinets with auxiliary steam boilers.—For medium-sized and large dairies this is the most satisfactory type of steam cabinet. Everything considered, the most satisfactory construction material is wood or metal. A wood cabinet is less durable than one of concrete, brick, or hollow tile, but is, on the other hand, both cheaper to build and cheaper to operate. A metal cabinet is somewhat more expensive to build, but is about as cheap to operate as a wood cabinet.

In the case of concrete, brick, or hollow-tile cabinets, care must be taken to see that the boiler is large enough to provide the extra amount of steam required to offset the greater amount of heat absorbed by the walls of these materials.

strength, and by fully submerging each article to be treated for at least two minutes.

Treatment of equipment other than pails.—Rubber milking-machine parts may be satisfactorily treated by immersing them for two minutes in water brought to 170° F. or leaving them in a standard chlorine solution until the next milking.*

Strainer cloths shall be treated (only after thorough washing) by boiling, or by exposure in steam cabinets, or by immersion in a standard chlorine solution. If treated in the steam cabinet, they must be physically separated from each other to insure free access of steam. Single service sterilized strainer pads are preferred.

Boiling water treatment.—Boiling water treatment shall be accepted as satisfactory compliance when the articles are completely immersed for at least two minutes in water maintained at 170° F. or higher throughout the period of immersion. Pouring hot, or so-called "boiling water," from vessel to vessel is not adequate and will not be accepted.

Item 15r.—Utensils—Storage.

All containers and other utensils used in the handling, storage, or transportation of milk or milk products shall be stored so as not to become contaminated before again being used.

Public health reason.—Careless storage of milk utensils, which have previously been properly treated, is apt to result in recontamination by flies and dust, and thus to render them unsafe.

Satisfactory compliance.—This item shall be deemed to have been satisfied when all utensils and vessels, including strainer cloths, are:

- (1) Left in the treating chamber until used, or
- (2) Stored in the milk house in a place protected from contamination, not on the floor, inverting such articles as can be inverted. Storage racks shall be constructed of metal, or such other satisfactory material, the surface of which is impervious, smooth, and easily cleanable.

If cotton discs are used, they shall be kept in the original package, protected from contamination, until used.

Milk containers and equipment shall be used for milk handling purposes only.

* Also see Farmers' Bulletin No. 1315.

2271 Item 16r.—Utensils—Handling.

After bactericidal treatment, no container or other milk or milk products utensil shall be handled in such manner as to permit any part of the person or clothing to come in contact with any surface with which milk or milk products come in contact.

Public health reason.—Carrying milk pails by inserting the fingers under the hood, carrying an armful of milk-can covers against a solid shirt or jacket, carrying a strainer cloth over the shoulder or in a pocket, and similar handling of vessels and utensils undo the effect of bactericidal treatment.

Satisfactory compliance.—This item shall be deemed to have been satisfied when none of the above or similar practices is in evidence.

Item 17r.—Milking—Udders and Teats.

The udders and teats of all milking cows shall be clean at the time of milking.

Public health reason.—Cows frequently contaminate their udders by standing in polluted water or lying down in the pasture or barn yard. Unless the udders and teats are carefully cleaned just before milking, particles of filth are apt to drop into the milk. Such contamination of the milk is particularly dangerous because cow manure may contain the organisms of tuberculosis, and polluted water may contain the organisms of typhoid fever and other intestinal diseases.

Satisfactory compliance.—This item shall be deemed to have been satisfied when the cows' udders look and feel clean at the time of milking.

The udders and teats must, in addition to being clean, be treated with the previously described chlorine solution.*

* This precautionary measure has the advantage of giving an additional factor of safety with reference to such disease organisms as are not removed by ordinary cleansing. The measure is best carried out by following the preliminary cleansing by scrubbing the udders and teats with a large cloth saturated with the chlorine solution. The cloth is then wrung as dry as possible, and the bag mopped free of excess solution. After thus treating six or eight cows, a fresh pail of solution should be prepared. This treatment will give quicker and more complete bacterial removal of udder contamination than plain water or soap and water.

An additional precaution is the discarding of the first several streams of milk from each teat. They can be discarded into a calf bucket, and wasting the milk or soiling the floor thereby avoided. This precaution will help keep the bacterial count of the milk low, as it is the first few streams of milk which contain most of the bacteria in fresh milk.

Item 18r.—Milking—Flanks.

The flanks, bellies, and tails of all milking cows shall be free from visible dirt at the time of milking.

Public health reason.—Cleanliness of the cows is one of the most important factors affecting the bacterial count of the milk. Under usual farm conditions, cows accumulate on their bodies quantities of manure, caked mud, dust, chaff, loose hairs, etc. Practically all of these materials carry bacteria and are apt to fall into the milking pail during the process of milking. This may result in contaminating the milk with bacteria.

Satisfactory compliance.—This item shall be deemed to have been satisfied when the flanks, bellies, and tails are free from dirt at the time of milking, as evidenced by sight and touch.

The cows should be cleaned by going over each one with a stiff brush, preferably using water freely at the same time to assist in the cleansing and to prevent dust. Clipping long hairs from the flanks, belly, and bag, and cutting the brush of the tail so that it does not drag, are required. All brushing should be completed before milking is begun.

Item 19r.—Milkers' Hands.

Milkers' hands shall be clean, rinsed with a bactericidal solution, and dried with a clean towel immediately before milking and following any interruption in the milking operation. Wet-hand milking is prohibited. Convenient facilities shall be provided for the washing of milkers' hands.

Public health reason.—The reasons for bactericidal treatment of the hands of milkers are similar to those for bactericidal treatment of the udders. In the course of the preparation for milking, the hands of the milkers have come into contact with almost identically the same kind of materials as may have contaminated the udders. During the course of his duties and natural habits outside of the milking barn, the dairyman's hands must be assumed to have been exposed to body discharges.

Wet-hand milking increases the likelihood of contaminating the milk. Washing facilities are required in order to increase the assurance that milkers' hands will be washed.

Satisfactory compliance.—This item shall be deemed to have been satisfied when?

(1) The milker's hands have been washed with water to which an approved bactericide has been added, and

(2) Are dry at the time of milking, and

(3) Hand-washing facilities, including clean towels, are provided in or easily accessible to the milking barn.

The hands of all milkers must be dipped and washed in a standard bactericidal solution and wiped dry before milking is begun. This applies to the man who handles the milking machines and applies and removes them from the cows, and to the stripper.

Washing facilities convenient to the barn are required, including either running water or a suitable vessel and an adequate supply of clean water, soap, and a clean cloth or towel for each milker.

Item 20r.—Clean Clothing.

Milkers and milk handlers shall wear clean, washable outer garments while milking or handling milk, milk products, containers, utensils, or equipment.

2272 Public health reason.—Because of the fact that the hands of all workers frequently come into contact with their clothing, it is important that the clothes worn during the milking and handling of the milk be clean.

Satisfactory compliance.—This item shall be deemed to have been satisfied when milkers are found wearing washable outer garments that are not excessively soiled, or when such clothes are found hanging in a clean place in the barn or the milk house.

White suits are not required, but washable over-garments are required.**

If women milkers wear clean aprons, this will be considered as satisfactory.

* A bucketful of bactericidal solution should be handy in the barn during milking. Every time a milker has finished milking a cow and has removed his stool to the next cow, he should rinse his hands in the solution. The first washing in the solution does not afford subsequent protection against recontamination from the cow's flanks, or even from the clothes and person of the milker.

** A good practice is for milkers to have one suit of overalls for milking and another for general work. The suits are changed just before milking.

Item 21r.—Milk Stools.

Milk stools shall be kept clean.

Public health reason.—Clean milk stools reduces the likelihood of contamination of milkers' hands between the milking of individual cows.

Satisfactory compliance.—This item shall be deemed to have been satisfied when the milk stools are so constructed as to be easily kept clean, look and feel clean, and are stored above the floor when not in use.**

Item 22r.—Removal of Milk.

Each pail of milk shall be removed immediately to the milk house or straining room. No milk shall be strained or poured in the dairy barn.

Public health reason.—Keeping the milk in the barn until all or a large part of the herd has been milked is apt to expose it to flies and dust, and to delay cooling. Straining milk in the barn likewise exposes it to dust and flies.

Satisfactory compliance.—If the milk house and barn are too widely separated to make practicable the straining of milk in the milk house, the construction of a small screened straining room in or near the barn, but not opening directly into it, is satisfactory.***

The use of the feed room or a similar enclosure for a straining room is not approved unless all foodstuffs or other materials are removed, and the room is so located that it does not open directly into the milking barn.

Item 23r.—Cooling.

Milk must be cooled within one hour after completion of milking to 65° F. or less, and maintained at that average temperature, as defined in section 3082(R), until delivery to a milk plant or receiving station, unless it is delivered within one hour after completion of milking.

Public health reason.—Milk produced under cleanly conditions usually contains from 1,000 to 10,000 bacteria per

** The usual practice is to scrub the stools several times a week, and keep them on hooks or pegs when not in use. Otherwise they are inevitably kicked around on the floor or in the gutters, or thrown into a corner, and quickly become soiled. Many dairies are equipped with metal milk stools, which are easy to wash and keep clean.

Milk stools are frequently padded with old carpet or sacking for the comfort of the milkers. Such stools cannot be washed and cannot be kept clean. Their use does not comply with these requirements.

*** This method still has the disadvantage of delaying cooling, though this can be reduced by taking every canful of milk to the milk house as soon as filled.

c. c. immediately after milking. These multiply to enormous numbers in a few hours if the milk is not cooled. When the milk is properly cooled, however, there is but a very slow increase in numbers of bacteria. In order to understand this, it is merely necessary to recall that bacteria are very small plants, and that most plants do not grow in cold weather.

Usually the bacteria in milk are harmless, and if this were always true there would be no reason to cool milk except to delay souring. There is, however, no way for the dairyman or board of health to make absolutely sure that no disease bacteria have entered the milk (even though observance of the other items of these requirements will much reduce this likelihood), and frequent epidemics among milk consumers prove without question that this happens. The likelihood of contracting disease is much increased when the milk contains large numbers of disease bacteria, and for this reason it is extremely important that milk be quickly cooled so that any small numbers of disease bacteria which may have entered shall not be permitted to multiply.

Satisfactory compliance.—This item shall be deemed to have been satisfied when milk delivered to a milk plant or receiving station is either delivered within one hour after completion of milking, or, if delivered after the expiration of one hour, has been cooled before the expiration of one hour to 65° F. or less, and maintained at or below that average temperature until delivery.

The milk temperature should be determined in the following manner. The contents of the can or vat shall be thoroughly stirred before the thermometer is inserted. The stirring dipper or rod may be treated between samples in a five-gallon can of water to which has been added five ounces of standard stock chlorine solution.

Thermometers to Be Used in Determining Milk Temperatures.

Type—Pocket type, mercury actuated.

Magnification of mercury column.—To apparent width of not less than 1/16-inch.

Scale range.—30° F. to 120° F. with extension either side permissive.

Temperature represented by smallest scale division.
1° F.

2273 Number of degrees per inch of scale.—Not more than 32.

Accuracy.—Within 1°F. plus or minus.

Case.—Metal, provided with suspension ring and fountain pen clip.

Bulb.—Corning normal, or equally suitable thermometric glass.

Special Handled Thermometer to Be Used in Platform Determination of Milk Temperatures.

Type.—Long-stem-handle type, mercury actuated.

Magnification of mercury column.—To apparent width of not less than $1/16$ -inch.

Scale range.— 30°F. to 90°F. with extension either side permissive.

Temperature represented by smallest scale division. 1°F.

Number of degrees per inch of scale.—Not more than 10.

Accuracy.—Within $\frac{1}{2}^{\circ}\text{F.}$, plus or minus.

Bulbs.—Corning normal, or equally suitable thermometric glass.

Cooling Methods*

The bottom of the vat may be provided with a removable rack to protect it from undue wear. The vat may be provided with a lid in order to promote cooling. If it be assumed that the thickness of the rack is two inches, the total inside height of the vat from the vat floor to the under surface of the lid should be 30 inches. The vat must be provided with an overflow outlet which, assuming again that the rack is two inches thick, must be 23 inches above the vat floor.

All cooling vats shall be provided with bottom drains to permit emptying and cleaning.

* Cooling in the vat.—Note: a simple and frequently used method of cooling is to pour the milk as it comes from the barn directly into cans set in a vat of ice or flowing well water, and then to stir the milk thoroughly each time another pailful is added. A can of milk can be cooled in this manner in a short time.

It is recommended that where ice is used, the size of cooling vats be determined from the following tables:

Inside dimensions, in inches, of cooling vats for five-gallon-cans

Number of cans	2	4	6	8
Width	26	26	26	30
Length	36	46	70	80

Inside dimensions, in inches, of cooling vats for eight-gallon and for ten-gallon cans.

Number of cans	2	4	6	8
Width	30	30	36	42
Length	36	60	75	84

The cold water inlet piping should discharge into the bottom of the vat. To promote adequate cooling, dairymen should use motor or engine driven water pumping equipment.

The vat may be constructed of metal, wood, or concrete. Concrete is preferred, built as a unit separate from the walls of the building. Tanks should also be provided with a cover. Cooling is promoted by insulating the vat.*

*U. S. Department of Agriculture Farmers' Bulletin No. 976 contains the following statement regarding insulated cooling vats:

"While from the point of view of cooling, wooden tanks give good results, an insulated concrete is much more desirable, as it is easily built and can be set partly in the ground. A wooden or galvanized iron tank does not last long under similar conditions. When the tank is set low, cans of milk can be lifted in or out with much less effort than when it is entirely above the ground. The total thickness of the walls of an insulated concrete tank should be 8 inches, divided into two walls, the outside being 2 inches, then 2 inches of good insulating, and the inside wall 4 inches thick. The concrete mix should consist of 1 part Portland cement, 2 parts clean, sharp sand, and 4 parts broken stone or gravel. For the purpose of waterproofing, hydrated lime equal to 10 per cent. by weight of the cement should be added to the mixture. The insulation used should be coated with and set in hot asphalt which should be allowed to become thoroughly dry before the inner walls of the tank are put up. The inside walls should be very carefully trowelled so as to insure a smooth surface without projecting particles."

One good type of insulating material is 2-inch sheet cork. If cork is considered too costly, 2-inch plank, carefully dried and then thoroughly coated on all surfaces with hot asphalt, has probably a fairly high insulating value when imbedded in concrete. Non-insulated vats should be separated from the milk house walls by a dead air space.

The quantity of ice necessary to cool the milk to a certain temperature is dependent upon the size of the vat, the atmospheric temperature, the amount of milk to be cooled, and the extent to which it has been pre-cooled.

Cooling over surface coolers. It is obvious that milk should be cooled more quickly by causing it to flow in a thin film over a metal surface constantly cooled by a cold liquid behind it. The principle has been applied in the so-called surface cooler.

One device for applying this principle is the plain conical cooler. This device is usually operated by filling it with a mixture of ice and water and stirring the mixture as the milk flows over the cooler, or by flowing cold water through it. The advantages of this method of cooling are its low first cost and the fact that milk is cooled more quickly than by the previously described vat method.

Another type of surface cooler, somewhat more expensive in first cost, but better designed, is the corrugated or tubular cooler, especially designed to permit the constant flow of water through it while the milk flows over its outer surface. Because of its efficient design, this type of cooler can be made to cool milk to within two or three degrees of the temperature of the water (impossible with conical cooler). This utilizes the maximum cooling effect of the water supply.

Another type of tubular cooler is composed of two sections, uniced water flowing through the upper section, and cold brine or ice water through the lower section. This type also utilizes the full cooling effect of the natural water supply. The principal advantage of this layout lies in the fact that the desired milk temperature is achieved more rapidly than by any other means.

Another type of cooler is the "in-the-can" cooler.

Keeping milk cold.—Dairymen who can deliver milk twice a day to a milk pasteurizing plant or cooling station are not required to cool the milk if it can be delivered within one hour after milking. However, prompt cooling immediately after milking is to be recommended in all cases.

Item 24r.—Proper Feeding.

The cows shall not be fed on slops, refuse of any distillery or brewery, glucose, or on any malt in a state of fermentation, putrefaction or decomposition, or on any putrefying or unwholesome feedstuffs. No dry, dusty, or strong odor feeds shall be fed to the cows immediately before milking.

Item 25r.—Personnel—Health.

Every person connected with a dairy whose work brings him in contact with the production, handling, storage, or transportation of milk, milk products, containers, or equipment shall furnish such information, permit such 2274 physical examinations, and submit such laboratory specimens as the board of health may require.

No person shall spit in any part of any room, vehicle, or other place used for the sale, storage, handling, or transportation of milk or milk products.

Item 26r.—Vehicles.

All vehicles used for the transportation of milk or milk products shall be so constructed and operated as to protect the milk or milk products from the sun and from freezing, and from contamination. Such vehicles shall be kept clean, and no substance capable of contaminating milk or milk products shall be transported with milk or milk products in such manner as to permit contamination.*

Milk haulers shall furnish to the board of health at least once each month a list showing the name and address of each producer whose milk has been hauled during that period, the amount of milk hauled daily, and the name and address of the milk plant supplied with such milk.

* The condition and appearance of the delivery vehicles do much to credit or discredit milk control in the mind of the consumer. It is important, therefore, in order to encourage the consumption of milk, as well as in order to protect it from contamination during delivery, that inspectors rigidly enforce this item, both as to the cleanly appearance of the vehicle, as to its being the properly covered type, with tight bottom and sides, and as to the carrying of such material capable of contaminating milk supplies.

Requirements for Pasteurization Plants, Etc.

Grade A pasteurized milk shall be pasteurized, cooled, and handled in a milk plant conforming with all of the following items of sanitation and any additional requirements of the board of health. The average bacterial plate count of milk shall at no time after pasteurization and until delivery exceed 30,000 per cubic centimeter, as determined under sections 3082 (R) and 3092.

The requirements for grade A milk products shall be identical with those for milk, except that the bacterial standards shall be doubled in the case of cream, and omitted in the case of sour cream, buttermilk, and cultured buttermilk.

Item 1p.—Floors.

The floors of all rooms in which milk or milk products are handled or stored shall be constructed of concrete or other equally impervious and easily cleaned material and shall be smooth, properly drained, provided with trapped drains, and kept clean.

Public health reason.—Floors constructed of concrete or other similarly impervious material can be kept clean more easily than floors constructed of wood or other pervious or easily disintegrating material, will not absorb organic matter, and are, therefore, more apt to be kept clean and free of odors. Properly sloped floors facilitate flushing, and avoid sloppiness. Trapping of drains prevents sewer gas entering the plant. Clean floors are conducive to clean milk-handling methods.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) When the floors of all rooms in which milk is handled are constructed of good quality concrete, equally impervious tile or brick laid closely with impervious joint material, metal surfacing with impervious joints, or of other material which is the equivalent of good quality concrete; and

(2) When the floor surface is smooth and sloped so that there will be no pools of standing water after flushing, and the joints of the floor and walls are constructed so as to be impervious (a 6-inch cove base to be provided for all floors hereafter constructed); and

(3) When the floors are provided with trapped drains so constructed as to minimize clogging; and

(4) When the floors are kept clean at all times. Floors shall be kept free not only of organic filth, but also of litter. Materials and equipment not routinely used in a given room shall not be stored therein, as this practice renders it difficult to keep the floor clean. Materials and equipment not in routine use shall be stored in a special storage room or rooms in which milk handling operations are not conducted.

Item 2p.—Walls and Ceilings.

Walls and ceilings of rooms in which milk or milk products are handled or stored shall have a smooth, washable, light-colored surface in good repair and be kept clean.

Public health reason.—Painted or otherwise properly finished walls and ceilings are more easily kept clean and are therefore more apt to be kept clean. A light-colored paint or finish aids in the even distribution of light and the detection of unclean conditions. Clean walls and ceilings are conducive to clean milk-handling operations.

Satisfactory compliance.—This item shall be deemed to have been satisfied if walls and ceilings are finished with light-painted wood, impervious, smooth tile, smooth-surface concrete or cement plaster, brick, or other equivalent materials with a washable light-colored surface, and walls and ceilings are kept clean and refinished as often as the finish wears off or becomes discolored.

Pipes other than milk lines shall be kept painted with a durable paint.

Item 3p.—Doors and Windows.

All openings into the outer air shall be effectively screened to prevent the access of flies. Doors shall be self-closing.

2275 Public health reason.—Flies may infect the milk with disease germs after it has been pasteurized, thus nullifying the effectiveness of pasteurization.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) If all openings to the outer air are effectively screened; or

(2) If fans of sufficient power to prevent the entrance

of flies are in use at all ineffectively protected openings; and

(3) If all doors are self-closing, and all screen doors to the outer air open outward.

Openings through which cans or crates or other articles are loaded in rapid succession so as to make impracticable the proper use of self-closing screens may be protected by properly constructed flaps or by fans of sufficient power to prevent the entrance of flies. Such fans must be operated at all times when doors are open.

Window and door screens must be tight-fitting and free of holes. This includes the screens for skylights and transoms.

This item must be satisfied during the seasons of the year when flies are evident.

Item 4p.—Lighting and Ventilation.

All rooms shall be well lighted and ventilated.

Public health reason.—Ample light promotes cleanliness. Proper ventilation reduces odors and prevents condensation upon interior surfaces.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) If artificial light is provided equivalent to one 50-watt electric light per 100 square feet of floor area, reasonably evenly distributed.

(2) If the unobstructed window or skylight space in each room of pasteurization plants (except refrigerator) hereafter constructed is not less than 10 per cent. of the floor area of said room, and the light is reasonably evenly distributed so that all operations and equipment are adequately lighted.

(3) If all rooms are adequately ventilated, in the opinion of the inspector, and ample to prevent undue condensation upon interior surfaces. Ventilation equipment supplementary to windows and doors is to be provided if necessary.

(4) If the excess steam from equipment is exhausted elsewhere than in the milk-handling room.

(5) When lighting and ventilation complies with ordinances of the City of Chicago and the rules and regulations of the board of health.

Item 5p.—Protection From Contamination.

The various milk-plant transportation, storage, and distribution operations shall be so located and conducted as to prevent any contamination of the milk or of the cleaned equipment. All means necessary for the elimination of flies shall be used. This requirement shall be interpreted to include separate rooms for (a) the pasteurizing, cooling, and bottling operations; (b) the washing and bactericidal treatment of containers and equipment. Cans of raw milk shall not be unloaded directly into the pasteurizing room. Pasteurized milk or milk products shall not be permitted to come in contact with equipment with which unpasteurized milk or milk products have been in contact, unless such equipment has first been thoroughly cleaned, and subjected to bactericidal treatment. Rooms in which milk, milk products, cleaned utensils, or containers are handled or stored shall not open directly into any stable or living quarters.

Public health reason.—If the washing and bactericidal treatment of containers are conducted in the same room in which the pasteurizing, cooling, or bottling is done, there is opportunity for the pasteurized product to become contaminated, particularly by flies. For this reason, separate rooms are required as indicated. The unloading of cans of raw milk directly into the pasteurizing room is apt to increase the prevalence of flies therein and to render it too public.

Sometimes, simple screening is not sufficient to keep out flies. For this reason, other methods are required if screening proves insufficient.

Satisfactory compliance.—This item shall be deemed to have been satisfied under the following conditions:

(1) The plant contains sufficiently large separate rooms for (a) the pasteurizing, cooling, and bottling operations, and (b) the washing and bactericidal treatment of containers. The pasteurizing, cooling, and bottling operations may be conducted as a group in a single room, if desired, and the washing and treatment of containers may be conducted in a single room; but the two groups of operations must be kept in separate rooms.

(2) Cans of raw milk are unloaded either into a room separated by solid or screened partitions from the pasteurizing room, or upon an outside platform and then

pushed through a flap or fan-protected opening into the receiving or pasteurizing room. The purpose of this provision is to prevent the unloading of cans directly from the trucks through open doors into the pasteurizing room, which would make the pasteurizing room too public.

(3) All equipment with which milk comes in contact is covered and otherwise protected to prevent the access of flies, dust, and other contamination during operation. Receiving or dump vats shall be completely covered except during washing and bactericidal treatment, and except when milk is being received or sampled; when openings of sufficient size for these purposes may be uncovered.

(4) All necessary means supplementary to the use of screens are used for the elimination of flies.

(5) Pasteurized milk shall not be strained or filtered except through a metal strainer constructed of not readily corrodible material other than woven wire.

(6) Pasteurized milk or milk products are not permitted to come into contact with equipment with which unpasteurized milk or milk products have been in contact. There shall be no raw milk by-pass around the pasturization holder.

(7) Rooms in which milk or milk products or cleaned utensils or containers are handled or stored shall not open directly into any stable or living quarters.

No milk plant or any room thereof shall be located in such manner as to permit of contamination to the milk or milk products.

The provision of a receiving room separate from rooms (a) and (b) defined above in item 5p, containing a dump vat, the milk from which is piped into the pasteurizing room, is urged, and is required in all existing plants receiving 200 gallons or more of milk daily. In all proposed plants, requirement is mandatory. A separate room or rooms for boilers and fuel is required.

If the design of the plant provides for pasteurizing or other equipment upon an elevated platform or mezzanine floor, the construction must be such as to prevent contami-

* For protection during cooling, see item 17p; for protection during bottling, see item 18p.

nation of equipment on the lower floor from cleaning or other operations on the upper floor.

Item 6p.—Toilet Facilities.

Every milk plant shall be provided with adequate, conveniently located toilet facilities conforming with the ordinances of the City of Chicago, and the requirements of the board of health. There shall be at least one room or vestibule not used for milk purposes between the toilet room and any room in which milk or milk products are handled or stored. The doors of all toilet rooms shall be self-closing. Toilet rooms shall be kept in a clean condition, in good repair, and well ventilated. In case privies or earth closets are permitted by the board of health, they shall be separate from the building, and shall be of a sanitary type constructed and operated in conformity with the requirements of item 10r, grade A pasteurized milk.

Public health reason.—The need for toilet facilities and the necessity for protecting the plant processes from toilet-contaminated flies are obvious.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) Adequate, conveniently located toilet facilities complying with the city plumbing code are provided, and

(2) There is at least one room or vestibule not used for milk purposes between the toilet room and any room in which milk, milk products, or equipment used in connection therewith are handled or stored, and

(3) The toilet-room doors are provided with springs or checks to make them self-closing, and

(4) The toilet-room, stool, etc., are kept clean, sanitary, and in good repair, and

(5) The toilet room is well ventilated and free from flies.

(6) Durable, legible signs are posted conspicuously in each toilet room directing the employees to wash their hands before returning to work.

A booth open at the top shall not qualify as a toilet room, as understood in this item.

Privies, if permitted, shall be constructed and operated in accordance with the requirements of item 10r, grade A Pasteurized Milk.

Item 7p.—Water Supply.

The water supply shall be easily accessible, adequate, and of a safe, sanitary quality.

Public health reason.—The water supply should be accessible so as to encourage its use in cleaning operations, it should be adequate so that cleaning and rinsing will be thorough, and it should be of safe, sanitary quality in order to avoid the infection of milk equipment and containers.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All milk-handling rooms of the pasteurizing plant are provided with an adequate number of water outlets, and

(2) The water supply is ample in quantity to insure proper cleaning of the plant and its equipment, and

(3) The water supply is approved as safe by the board of health and conforms with the specifications contained under item 11r, Water Supply, Grade A Pasteurized Milk, Satisfactory compliance, paragraph (4).

2277 Item 8p.—Hand-Washing Facilities.

Convenient hand-washing facilities shall be provided, including hot running water, soap, and sanitary towels of a type approved by the board of health. The use of a common towel is prohibited.

Public Health reason.—Washing facilities and sanitary towels are essential to the personal cleanliness of the milk handlers.

Satisfactory compliance.—This item shall be deemed to have been satisfied if hand-washing facilities, including hot and cold running water, soap, and individual cloth or paper towels, are provided. Washing facilities must be convenient. Bottle or can-washing vats shall not be accepted as washing facilities for personnel. Hot water must be on hand at all times, or within a reasonable time after opening the faucets. Soap and towels should be provided by the plant management. No employe shall return from a toilet to a room where milk or milk utensils are handled without first having washed his hands.

Item 9p.—Milk Piping.

Only "sanitary milk piping" of a type which can be easily cleaned with a brush shall be used.

Public health reason.—Milk piping and fittings are sometimes so designed as to be difficult to clean or they may be constructed of metal which corrodes easily. If piping and fittings are used which are difficult to clean or which corrode easily, or if exceptionally long lines or individual lengths of piping are used, it is unlikely that they will be kept clean. So-called "sanitary milk piping" is a term which applies to properly designed standard equipment.

Satisfactory compliance.—This item shall be deemed to have been satisfied:

(1) When the milk piping, fittings, and connections are of such a diameter and so designed as to permit easy cleaning with a brush; and

(2) When the milk piping and connections have a heavy not readily corrodible smooth finish, and all sweated connections are soldered smooth and flush; and

(3) When the connections are of such design as to avoid sharp corners or crevices which are difficult to clean; and

(4) When all parts of interior surfaces of pipe or fittings (including valves, fittings, and connections) are of such size and shape as to be accessible either to the sight or the touch, thus making it possible to determine whether they are clean. Bent or dented milk piping shall be considered as violating this item. Except in small installations, at least 1½-inch piping should be used; and

(5) When the length of the individual sections of milk pipe lines is reduced to the minimum practicable.

Item 10p.—Construction and Repair of Equipment and Containers.

All equipment and containers with which milk or milk products come in contact shall be constructed in such manner as to be easily cleaned and shall be kept in good repair.

Public health reason.—If the equipment is not so constructed that it can easily be cleaned, and is not kept in good repair, it is unlikely that it will be properly cleaned.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All surfaces with which milk comes in contact consist of smooth, not readily corrodible metal or unbroken vitreous material, and

(2) All joints are soldered flush with the surface or otherwise fitted to avoid open seams, or the surface, if vitreous, is continuous, and

(3) All surfaces with which milk or milk products come in contact are easily accessible for cleaning, and are self-draining, and

(4) All containers and other equipment are in good repair, free of breaks and corroded places, and

(5) All equipment and containers used are approved by the board of health.

The above requirements preclude the use of milk pumps which are not constructed of smooth, not readily corrodible metal, and all parts of which cannot be readily taken apart for cleaning.

The above requirement also precludes the use of any type of equipment so designed as to permit milk or milk products routinely to come in contact with threaded surfaces.

In all cases where a rotating shaft is inserted through a surface with which milk or milk products come in contact, the inspector shall assure himself that the joint between the moving and stationary surfaces is close fitting.

In cases where the thermometer bulbs are inserted through the surfaces with which milk or milk products come in contact, the thermometer bulb shall be provided with a pressure-tight seat ahead of all threads or crevices.

The covers and caps of all cans used for milk and milk products are to be so constructed and designed to prevent the possible contamination of the milk or milk products enclosed therein. New cans used as milk and milk products containers shall have umbrella-type covers, and all such cans shall be of a type approved by the board of health.

2278 Item 11p.—Disposal of Wastes.

All wastes shall be disposed of in conformity with the requirements of the board of health.

Public health reason.—The wastes resulting from the cleaning and rinsing of containers, equipment, and floors, from flush toilets, and from washing facilities, should be properly disposed of so as not to create a nuisance or a public health menace.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All wastes are disposed of in a public sewer, or

(2) In the absence of a public sewer, all wastes are disposed of by a method approved by the board of health; and

(3) No trash or refuse is present upon the plant premises except in properly covered containers.

Item 12p.—Cleaning and Bactericidal Treatment of Containers and Apparatus.

All milk and milk products containers and apparatus shall be thoroughly cleaned after each usage and subjected immediately before each usage to a bactericidal treatment approved by the board of health.

Public health reason.—Milk and milk products cannot be kept clean and safe if permitted to come into contact with containers and apparatus which have not been properly cleaned and treated. By bactericidal treatment is meant the destruction of such pathogens as are transmissible through milk supplies and all other organisms so far as practicable.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All containers are thoroughly cleaned after each usage, and all apparatus is thoroughly cleaned once each day on a clean support, such as a tank or rack (not the floor). Greasy or rough surfaces shall not be considered sufficiently clean. All demountable apparatus shall be taken down each day for cleaning, including thermometer fittings where pressure-tight seats are not employed. The storage on racks of all demountable apparatus until just before bactericidal treatment and usage is urged.

(2) All containers are given bactericidal treatment after each usage, and all apparatus is given bactericidal treatment at least once each day immediately before the beginning of the day's operations, in the following manner:

Bactericidal treatment of entire assembled equipment immediately prior to day's run.—The bactericidal treatment of the entire assembled equipment immediately prior to the day's run is required. This may be done by means of steam, hot water, or chlorine solution, as follows:

If steam is used, each group of assembled piping shall be treated separately by inserting the steam hose or pipe into the inlet and maintaining steam flow from the outlet for five minutes after the temperature of the steam at the

outlet has reached 200° F. (The period of exposure required here is longer than that required for individual cans, etc., because of the heat lost through the large surface exposed to the air.) Any completely enclosed equipment continuous with the pipe system, and under pressure from the pipe system, such as pre-heaters, pumps, filters, valves, tubular holders, regenerative heater-coolers, etc., may be considered as having been adequately treated by means of the above procedure. Covers and other closures and unions should be cracked loose to insure joints being thoroughly steamed, and to lessen expansion and contraction cracks or strains.

Equipment not under pressure from the pipe line, such as weigh cans, storage vats, fore-warmers, clarifiers, separators, pasteurization vats and pockets, coolers, and bottlers, must be treated separately.

Coolers should either be drained of refrigerant and the refrigerant valves closed before treatment, or the refrigerant intake valve closed and the return valve left open to provide for the expansion of the refrigerant. Covers must be in place during treatment.

If hot water is used, this may be done by pumping hot water through the entire equipment, the temperature of the water and the period of pumping being such that the temperature of the water at both the inlet and the outlet end of the assembly will have been at least 170° F. for at least five minutes.

When the assembly is so long that it is difficult to secure this temperature and time at the outlet end, the equipment should be treated in sections.

Supplementary treatment should be applied to any holder or to any other equipment, the entire surface of which is not reached by the hot water.

Coolers should either be drained of refrigerant and the refrigerant valves closed before treatment, or the refrigerant intake valve closed and the return valve left open to provide for the expansion of the refrigerant. Covers, which must have been separately treated previously, must be in place during treatment of the cooler proper. Care should be taken to see that the hot water covers the entire surface of all coolers.

2279 If chlorine solution is used, it shall be of such a strength that the solution appearing at the outlet end will show at least 50 parts per million of available chlorine.

The chlorine solution should be pumped through the entire equipment for at least five minutes.

Here again, such surfaces as are not reached by the chlorine solution shall be treated with steam as previously described, or the spray method of applying chlorine solution may be used for such surfaces as are not reached by the flowing chlorine solution.

Bottler treatment.—The bottler must be completely assembled before using any of the above methods. In the case of hot water or chlorine treatment, the bottler must be operated during the process so as to insure bactericidal treatment of all valves and fittings. This is not necessary in the case of steam treatment, but in this case the valves must be individually treated in place. This operation can be made most effective by attaching a device to the end of the steam hose which will enclose the valve and confine the steam.*

Bottle and can treatment.—Small plants, for which automatic washers may be deemed too large may wash their bottles manually and for these the use of the steam cabinet, of an individual hot water or steam-jet plate provided with a hood, or of chlorine immersion-type apparatus, is accepted as compliance.

Larger plants may use automatic washers which include steam, hot water, or chlorine treatment, the use of a strong alkali solution making it possible to use a shorter exposure period for the final treatment. The following requirements shall apply in the operation of soaker-type washers:

(1) The proportion of caustic alkali in relation to soda ash shall be at least two to one.

(2) The amount of caustic alkali permitted is a minimum of 1.6 per cent. reckoned as NaOH.

(3) The minimum temperature of the soaker solution shall be 120° F.

(4) Bottles shall be submerged within the caustic solution for at least 5 minutes.

(5) Final sterilization of the bottle shall be by means

* **Thermophiles.**—If the pasteurization plant becomes infected with thermophilic organisms, it may prove that more intensive bactericidal treatment or a change in methods may be necessary. If the steam or hot water method has been in use, an attempt should be made to use higher temperatures and for longer periods (above 200° F. for more than ten minutes).

of live steam, hot water, or an approved solution containing not less than 50 parts per million of available chlorine.

A suitable device for testing the amount of caustic alkali present in the solution shall be provided and used daily.

The alkali solution shall be renewed at least every two weeks or oftener when deemed necessary by the board of health.

The bacteriological examination shall show that the effect of the combination of the various agents is such as to produce bottles and cans having a residual bacterial plate count of not more than one per c. c. of capacity. After bactericidal treatment, cans shall be so treated as to dry rapidly. Cans returned to the producer or milk plant by the distributor shall be thoroughly dried after bactericidal treatment.

No bottles, cans, or other containers, which the inspector deems grossly contaminated, shall be introduced into the customary container washing section of the milk plant or the equipment or rooms in which milk is handled. All such bottles shall be washed in a separate part of the milk plant or other suitable location, designated for that purpose and approved by the board of health.

Item 13p.—Storage of Containers.

After bactericidal treatment, all bottles, cans, and other milk or milk products containers shall be stored in such manner as to be protected from contamination.

Public health reason.—If milk containers are not protected from contamination, the value of bactericidal treatment will be partly or entirely nullified.

Satisfactory compliance.—This item shall be deemed to have been satisfied if all bottles, cans, and other containers are stored in crates or on sanitary racks in a clean place protected from flies, splash, and dust. Such containers as can conveniently be inverted shall be stored in an inverted position.

Floors of any room shall not be flushed when crates of cleaned bottles are stacked thereon.

Item 14p.—Handling of Containers and Apparatus.

Between bactericidal treatment and usage, containers and apparatus shall not be handled in such manner as to permit any part of the person or clothing to come in contact

with any surface with which milk or milk products come in contact.

Public health reason.—Carrying bottles by inverting fingers into the mouths, running the hands over the surfaces of milk coolers, bottling machines, or pasteurization equipment, or allowing the clothing to brush against cleaned surfaces with which milk or milk products come in contact, will obviously nullify the effect of bactericidal treatment.

Satisfactory compliance.—This item shall be deemed to have been satisfied if the inspector is assured that the employes of the pasteurization plant are using every reasonable precaution to prevent the milk-contact surfaces 2280 of containers and apparatus from coming into contact with their persons or clothing between the time they are given bactericidal treatment and the time they are again used.

Cans used for milk and milk products and which employ paper or parchment covers or caps shall have such covers or caps placed thereon by mechanical means approved by the board of health.

Item 15p.—Storage of Caps and Parchment Paper.

Milk bottle caps and parchment paper for milk cans shall be purchased and stored only in sanitary tubes and cartons, respectively, and shall be kept therein until used.

Public health reason.—Soiled or contaminated caps nullify the benefits of the safeguards prescribed throughout the regulations, and packing the caps in tubes which are unbroken until they are placed in the bottling machine is the best manner of assuring cap cleanliness. This is similarly true of parchment paper for milk cans.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

- (1) All bottle caps are purchased in tubes, and all parchment paper for milk cans is purchased in cartons, and
- (2) The tubes and cartons are stored so as to be kept clean in a locked room, and
- (3) All caps kept at the bottling machine are protected from contamination, and
- (4) Plant employes, other than those directly engaged in the bottling and capping process, do not have access to the caps or the cap storage room.

The storage of cap tubes or parchment paper cartons in dusty places or the refilling of tubes or cartons with spilled caps or papers violates this item. At the beginning of each run, the first cap or the first paper shall be discarded, as it is exposed and may be contaminated.

Item 16p.—Pasteurization.

Pasteurization shall be performed as described in section 3082 (K) of this ordinance. The time and temperature record charts shall be dated and transmitted to the board of health weekly.

No milk or milk products shall be pasteurized more than once, except as may be specifically permitted by the board of health.

Satisfactory compliance.—This item shall be deemed to have been satisfied if the design and operation of the pasteurization apparatus meets the following specifications: 16p(a)—Indicating and Recording Thermometers.

Both indicating and recording thermometers shall be installed and used on each holder in which the holding time is not automatically controlled. Both indicating and recording thermometers shall be installed and used in both inlet and outlet manifolds of 30-minute holders in which the milk is brought to the final pasteurization temperature before entering the holder, and in which the holding time is automatically controlled. The following specifications shall be complied with in the case of all new equipment and in the case of all replacements of indicating and recording thermometers. They shall also apply to all repairs of recording thermometers requiring a renewal of the tube system. The accuracy specifications shall apply to old as well as new equipment.

The bulb of the indicating thermometer shall be located as near as practicable to the recording thermometer bulb. The outlet shall also be equipped with a recording thermometer which satisfies at least the following specifications. The bulb of the recording thermometer shall be integral with, or located as near as practicable to, the bulb of the automatic milk-pump stop.

* See definition of pasteurization in Section 3082 (K).

Indicating Thermometers Located on Pasteurization Vats or Pockets.

Type.—V-shaped brass or equally non-corrodible scale case, with removable glass front, mercury actuated, line etched in glass tube at $143\frac{1}{2}^{\circ}$ F., or other point, approved by the board of health, filling above mercury, nitrogen or equally suitable gas.

Magnification of mercury column.—To apparent width of not less than $1/16$ -inch.

Scale range.— 130° F. to 210° F., extension either side permissive, protected against damage at 220° F.

Temperature represented by smallest scale division.—Not more than 1° F.

Number of degrees per inch of scale.—Not more than 16.

Accuracy.—Within $\frac{1}{2}^{\circ}$ F., plus or minus, between 142° F. and 145° F.

Submerged stem fittings.—Pressure-tight seat against inside wall of holder. No threads exposed to milk. Location of seat to conform to that of standard I. A. M. D. wall-type fitting.

Bulb.—Corning normal, or equally suitable thermometric glass.

Indicating Thermometers Located on Pasteurization Pipe Lines.

Type.—V-shaped brass or equally non-corrodible scale case, with removable glass front, mercury actuated, 2281 line etched on stem at $143\frac{1}{2}^{\circ}$ F., or other point approved by the board of health, filling above mercury, nitrogen or equally suitable gas.

Magnification of mercury column.—To apparent width of not less than $1/16$ -inch.

Scale range.— 138° F. to 165° F., with extension on either side permissive, protected against damage at 220° F.

Temperature represented by smallest scale division.— 0.5° F.

Number of degrees per inch of scale.—Not more than 8.

Accuracy.—Within 0.5° F., plus or minus, throughout specified scale range.

Stem fittings.—Pressure-tight seat against inside wall of fittings; no threads exposed to milk; distance from under side of ferrule to top of bulb not less than 2 inches.

Thermometric lag.—When thermometer is at room temperature and then immersed in a well-stirred water bath maintained at a temperature at which the thermometer to be tested reads 160° F., the time required for the reading to increase from 141° F., to 153° F. shall not be more than 4 seconds.

Bulb.—Corning normal, or equally suitable thermometric glass.

Once each month, the board of health shall check the accuracy of all indicating thermometers at the legally required temperature of pasteurization by means of a standardized thermometer reading within 0.2° F. In the case of indicating thermometers located on vats or pockets, this may be done by lowering a standardized maximum self-registering test thermometer to the position of the bulb of the indicating thermometer in the holder during the holding period with the milk in agitation. In the case of indicating thermometers located on pipe lines, this may be done by fitting the indicating thermometer to a sanitary cross and inserting a standardized test thermometer through a thermometer holder (I. A. M. D. fitting No. 55-A) equipped with a rubber washer for holding the thermometer in place against pressure in the milk line, and attached to one of the arms of the cross by means of a union nut (I. A. M. D. fitting No. 13).

The inspector shall identify, by number, seal, or otherwise, the indicating thermometer when tested.

Inspectors' Maximum Self-Registering Thermometers To Be Used in the Testing of Indicating Thermometers on Pasteurization Vats or Pockets.

Type.—Maximum self-registering, mercury actuated, pocket type, readily cleanable.

Magnification of mercury column.—To apparent width of not less than 1/16-inch.

Protection against high-temperature damage.—At 155° F.

Scale range.—138° F. to 148° F., with extension of scale on either side permissive, 138° point to be not less than 1/4-inch above contraction.

Temperature represented by smallest scale division.—
0.2° F.

Number of degrees per inch of scale.—Not more than 6.

Accuracy.—Within 0.2° F., plus or minus, between 142° F. and 145° F.

Case.—Metal, provided with suspension ring and fountain pen clip.

Armor.—Thermometers, if armored, to be easily removable for cleaning, armor to be fenestrated opposite thermometer bulb; scale to be visible without removing armor.

Bulb.—Corning normal, or equally suitable thermometric glass.

The maximum self-registering test thermometers should be checked against themselves occasionally for failure to hold reading when taken from the liquid in which they have been immersed. This may be done by holding them in clean water at approximately 142° F., reading the temperature while immersed, and then reading the temperature again after the thermometer has been removed from the water.

Inspectors' Thermometers To Be Used in the Testing of Indicating Thermometers Located on Pasteurization Pipe Lines.

Type.—Mercury actuated, readily cleanable, plain front, enameled back, top finished with glass ring, length 12 inches, standardized for 4-inch immersion, immersion point to be etched on stem contraction chamber to be of narrow type immediately above bulb, not over 1 inch long, mercury to stand in contraction chamber at 32° F.

Protection against high temperature damage.—At 220° F.

Scale range.—138° F. to 165° F., with extension of scale on either side permissive, 138° point to be not less than 1 inch above immersion line.

Temperature represented by smallest scale division.—
0.2° F.

Number of degrees per inch of scale.—Not more than 6.

Accuracy.—Within 0.2° F., plus or minus, throughout specified scale range.

Carrying case.—Felt-lined metal.

Bulb.—Corning normal, or equally suitable thermometric glass.

Recording Thermometers for Pasteurization Apparatus.

Case.—Moisture proof (under operating conditions obtaining in pasteurization plants).

2282 **Scale range.**—100° F. to 150° F. with extension of scale on either side permissive.

Temperature represented by smallest temperature—scale division.—1° F. between 142° F. and 145° F.

Length of 1° F. scale division.—Not less than 1/16-inch between 142° F. and 145° F.

Time represented by smallest time-scale division.—Not more than 10 minutes.

Chord or straight-line length of 10-minute scale division.—Not less than 1/4-inch between 142° F. and 145° F.

Accuracy.—Within 1° F., plus or minus, between 142° F. and 145° F. The accuracy may be determined by the following mode of procedure:

(1) The instrument shall be adjusted to read correctly (if necessary) at some point between 142° F. and 145° F., while it is connected, with the pasteurization apparatus, and as shown by the tested indicating thermometer after a stabilization period of five minutes at constant temperature with the agitation device in operation.

(2) The bulb shall be removed from the pasteurizer and immersed for not less than five minutes in boiling water.

(3) The bulb shall then be immersed for not less than five minutes in melting ice.

(4) The bulb shall be again connected with pasteurizer, and temperature brought to a point between 142° F. and 145° F., as shown by the tested indicating thermometer under the same test conditions outlined under No. (1). At this time the deviation of the recording thermometer reading from that of the indicating thermometer shall not be more than 1° F., plus or minus.

Pen arm setting device.—Designed to give line not over 1/40-inch thick when in proper adjustment, which shall be easy to maintain.

Pen and chart paper.—Designed to give line not over 1/40-inch thick when in proper adjustment, which shall be easy to maintain.

Pressure system (bulb, tube, spring, etc.).—Protected against damage at bulb temperature at 220° F.

Stem fitting.—Pressure-tight seat against inside wall of holder or pipe. No threads exposed to milk. Location of seat in batch-type pasteurizers to conform to that of a standard I. A. M. D. wall-type fitting.

Chart speed.—The chart shall make one revolution in 12 hours, and shall be graduated for a 12-hour record.

Record of pump operation.—For continuous-flow installations there shall be recorded upon the recording thermometer chart the full record of the time during which the milk pump is in operation.

Checking setting of recording thermometers daily.—The setting of recording thermometers shall be checked against the indicating thermometers daily by the plant operator, and at least bi-weekly by the board of health, and shall be kept adjusted so as at no time to read higher than the indicating thermometer.

16p(b)—Maintenance of Pasteurization Time and Temperature.

Maintaining minimum legal pasteurization temperature.—The pasteurization equipment shall be operated so that the indicating thermometers and the recording thermometer charts both read at least the temperature which the definition of pasteurization requires the thermometers to show continuously throughout the holding period, and while milk or milk products are passing the outlet of the holder. The indicating and not the recording thermometer shall be used as an index of temperature by the plant operator.

The board of health shall accept only designs of equipment which have shown, on official test, a deviation between the hottest and coldest particles of milk or milk products of not more than 1° F. For all existing installations provided with the agitation devices and for all new equipment, agitation throughout the holding period shall be required.

All apparatus in which the milk or milk products are brought to the final pasteurization temperature before entering the holder, shall be equipped with an automatic milk-pump cutout device located at the holder inlet, and so adjusted that the milk pump will stop before or when the legal temperature of pasteurization is reached during descending temperatures, and will not start before the legal

temperature of pasteurization is reached during ascending temperatures. The accuracy of the cut-out and cut-in responses shall be tested daily by the plant operator at the beginning of the day's run, and at least monthly by the board of health. The temperatures at which the cut-out and cut-in responses occurred shall be entered by the operator upon the recording-thermometer chart.

The milk-pump stop shall be so designed as to make it impossible for the plant operator to lower the temperature at which it operates without the consent of the board of health. This may be done by means of a lock, the key of which will be in the possession of the board of health, by means of a seal, or by means of any other device approved by the board of health.

Maintaining minimum holding period (non-automatic).—

2283 Holders, in which the holding time is not automatically controlled, shall be so operated that the record charts will indicate the above required temperature for a period of 30 minutes, provided that holders, in which cooling in the vat is begun after the outlet valve is opened, shall be held at the required temperature for an additional period of time equal to the emptying time. In these cases, the normal emptying time for each holder to the level of the recording thermometer bulb in the vat shall be determined by the inspector. If cooling is begun simultaneously with the opening of the outlet valve, the recording thermometer chart shall show a holding time of 33 minutes. No milk shall be added to the vat after the pasteurization temperature has been reached.

Maintaining minimum holding period (automatic).—For designs in which the holding period is automatically controlled, the recording thermometer charts are not required to show evidence of the holding period, but the following specifications shall be fulfilled:

Tubular holders shall be constructed and equipped in a manner to insure that every particle of milk or milk products will be held for the required period. In order to meet this requirement, the holder shall be equipped at both inlet and outlet ends with a pump geared directly to a properly timed constant-speed induction motor, except that in the case of installations in which the holder empties by gravity, the outlet pump is not required. In the latter case, the valve on the outlet piping shall be of such a size and so constructed that every particle of milk issuing from the

holder during the emptying period will have been held in the holder for the legally required holding period.

Pocket-type holders shall be equipped with a timing device operated by a constant-speed motor so that every particle of milk or milk products will be held for the legally required holding period. The interval between the closing of the inlet valve and the opening of the outlet valve must be not less than 30 minutes.

Immediately after installation or any replacement, or alteration in design or arrangement, each pasteurizer shall be tested by the board of health for compliance with the required detention requirement. The test shall be made at the highest pump speed, with all valves and any other flow-impeding devices open to their fullest extent, and in case filters are used, with a new filter in place. The holding time determined shall be for that part of the system lying between the bulb of the holder-inlet recording thermometer and the cooler inlet.

In the case of pocket-type installations, this may be done by checking the timing device with a watch.

In the case of tubular holders, this may be done by means of either chloramine, uranine or starch-iodide. When the chloramine, uranine, or starch-iodide methods are used, the solution may be pumped through the holder at the pasteurization temperature.*

* The following is a suggested method of testing by means of chloramine, uranine, or starch solutions:

A cap on the inlet pipe to the holder is drilled to receive a straightway pet cock for use with a large-size (at least 100 c. c.) syringe. The needle is not required, as the glass nipple of the syringe, provided with a rubber washer, can be inserted directly into the pet cock, thus increasing the speed of injection.

The syringe is filled with a saturated solution of chloramine, uranine, or starch, and the solution injected after the installation is in smooth operation with water at the pasteurization temperature. The time of beginning injection must be observed accurately.

Twenty-five minutes after the solution has been injected, the taking of samples at the outlet end of the holder is begun and continued at 30-second intervals. These samples are tested for the presence of chloramine, uranine, or starch. The difference in time between injection and appearance at the effluent end is the observed holding time.

The holding time during filling or emptying of the holder may not be identical with the holding time observed for normal flow conditions.

The holding time during filling may be determined by (1) injecting the solution 10 minutes after filling has begun; (2) opening the effluent valve and beginning routine flow through the holder as soon as the holder is full, but not before the lapse of 30 minutes from the beginning of the filling; and (3) taking samples at the effluent end at 30-second intervals from and after 25 minutes from the time the solution was injected. The holding time is then computed as before.

The holding time during emptying may be determined by injecting the solution at the moment the emptying operation begins, and observing the time taken to reach the effluent end by taking samples as before.

Recording thermometer charts.—All recording thermometer charts shall be transmitted weekly to the board of health. All charts shall contain the following information:

(1) Date.

(2) The number of the pasteurizing vat or installation to which the thermometer is attached, in case more than one pasteurizer is in operation at the plant. In the case of continuous-flow tubular or pocket-type installations, the chart shall indicate whether the thermometer concerned is located at the inlet or the outlet end of the installation.

(3) The temperature shown by the indicating thermometer and the corresponding time indicated by the recording thermometer, taken at some time during the day when the indicating thermometer shows the legally required minimum temperature of pasteurization.

(4) The permit number.

(5) The kind of product pasteurized.

16p(c)—Inlet and Outlet Valves.

Design

Leak-protector inlet and outlet valves or devices shall be provided for each vat or pocket of vat and pocket-type installations, except in the case of existing single-vat installations.

In all cases, close-coupled outlet valves shall be required. A close-coupled valve shall mean a valve so designed that the milk nearest its face will not be more than 1° F. 2284 colder than the hottest milk in the holder, when the latter is operated as specified in these regulations.*

Operation

Disconnection of single-vat holders from inlet and outlet piping.—Single-vat installations, not provided with leak-

* The reason for the first requirement is that no ground-surface valve will long remain leak-proof. If the valve in question is an inlet valve connected to the raw supply, the raw milk will leak into the pasteurizing chamber during the holding and emptying periods. This leakage will, of course, not have been pasteurized for the required length of time. On the other hand, leakage escaping past outlet valves before the milk or milk product in the holder has been held for the full holding period, will contaminate the pasteurized supply.

The reason for the second requirement is that pipe sections, even though but two or three inches long, between the body of the holder and the outlet valve will contain milk or a milk product which may be, for part or all of the holding period, more than 1° F. below the temperature of the hottest milk. The board of health therefore requires all pasteurization holders to be equipped with close-coupled valves.

protector inlet and outlet valves, shall be disconnected from the raw milk supply during the heating, holding and emptying periods, and from the outlet piping during the filling, heating, and holding periods.

Bactericidal treatment of outlet valves.—All outlet valves except leak-protector plug-type valves shall be given bactericidal treatment immediately before the discharge of pasteurized milk. This shall be accomplished by means of a steaming connection in the valve itself, or, in the case of existing, otherwise satisfactory valves, by blowing steam from a steam hose upon the valve or by any other method approved by the board of health. The steaming period shall be at least 30 seconds, unless the surfaces to be treated are exposed directly to the steam, in which case the period of exposure shall be not less than 15 seconds. Automatically operated valves, except leak-protector plug-type valves, shall be steamed automatically.

In the case of tubular holders, the outlet valve shall be steamed after the holder has been completely filled with milk (in the case of 30-minute pasteurization, not before 30 minutes after starting to fill the holder), and shall not be opened until after the steaming operation.

16p(d)—Foam-Heating.

For holders of vat or pocket types, means shall be provided and used which will keep the atmosphere above the milk at a temperature of 150° F. to 155° F. during the heating and holding periods. If steam is admitted into the holder, the steam line shall be provided with a trap properly designed to avoid the discharge of water into the milk and approved by the board of health.**

** This specification is included because a large percentage of the designs of milk-handling equipment in use today result in the formation of a blanket or of islands of foam on the surface of the milk in vat or pocket-type holders, and because the temperature of the air above the milk is frequently far below the temperature of pasteurization, and studies show that the temperature of the foam can be well below 130° F., when the main body of the milk is at 145° F.

Therefore, the mixture of such foam and milk which leaves the holder at the end of the pasteurization process is not safely pasteurized. Disease organisms, if present in the foam before pasteurization, may be present in the foam after pasteurization.

The designs illustrating the types of air-heating equipment required by the board of health with respect to this item may be obtained from said board.

Operating instructions.—In order to heat air prior to filling vat, steam should be admitted to distributor about 5 minutes before milk enters vat. Air temperature in vat should be kept at 150°-155° F. throughout the entire holding period. More steam is usually required during heating period than during holding.

The surface of the milk should be not less than 1 inch below the bottom of the thermometer bulb to avoid erroneous air thermometer readings from milk splash during agitation.

The steam distributor and its openings should be thoroughly cleaned every day.

Air and Foam Temperature Indicating Thermometers

Type.—V-shaped brass or equally non-corrodible scale case with removable glass front, mercury actuated, bottom of bulb chamber not less than 2 inches and not more than $3\frac{1}{4}$ inches below under side of cover, filling above mercury, nitrogen or equally suitable gas.

Magnification of mercury column.—To apparent width of not less than 1/16-inch.

Scale range.—130° F. to 210° F., extension either side permissive, protected against damage at 220° F.

Temperature represented by smallest scale division.—1° F.

Number of degrees per inch of scale.—Not more than 16.

Accuracy.—Within 1° F., plus or minus, throughout specified scale range.

Steam fitting.—I. A. M. D. ferrule.

Bulb.—Corning normal, or equally suitable thermometric glass.

16p(e)—Vat and Pocket Covers.

The covers of vats must be so constructed that nothing on top thereof will drop into the vats in either their open or closed position.*

The covers of all equipment must be kept closed during operation, except in case of emergency.

16p(f)—Pre-heating Holders.

All holders, used for holding milk which has been heated to the pasteurizing temperature before entering the holders,

* Some vat covers are so designed that pools of milk or condensation, etc., which may have accumulated on top of the covers, may drop into the milk. This sometimes occurs through the inlet part of the cover, or by drip over the back edge of the cover into the vat when the cover is raised. Inasmuch as the material thus entering the vat may be contaminated, it is necessary that the cover be so designed as to overcome this objection. This may be done by means of vertical fins, overlapping edges, and setback hinges. It will usually be a simple matter for the plant owner to have a tinner make the necessary corrections in the design of the cover.

shall be pre-heated with steam or otherwise so that the metal shall be at least at the pasteurizing temperature before the holding period begins.

2285 Item 17p.—Cooling.

All milk received for pasteurization, but not pasteurized within one hour after it is received at the plant, shall then be immediately cooled in equipment approved by the board of health to a temperature of 50° F. or less and maintained thereat until pasteurized; and all pasteurized milk and milk products shall be immediately cooled to an average temperature of 50° F. or less, as defined in section 3082 (R), and maintained thereat until delivery to the final purchaser.

Public health reason.—If milk is not cooled within a reasonable time after it is received at the pasteurization plant, its bacterial count will be materially increased.

The same public health reason applies to the cooling of milk and milk products after pasteurization.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All milk intended for pasteurization, but not pasteurized within one hour after it is received at the plant or cooling station, is then immediately cooled to 50° F. or below, and maintained thereat until pasteurized. All milk shall be cooled or pasteurized as soon as possible after receipt.

(2) All pasteurized milk and milk products are cooled immediately after pasteurization to 50° F. or below, and maintained at that average temperature, as defined in section 3082 (R), until delivery to the final purchaser.

(3) All surface coolers meet the following specifications:

(a) The sections of open-surface cooler shall be installed so as to leave a gap of at least $\frac{1}{2}$ -inch between the header sections to permit easy cleaning. On new installations, the header faces above and below such gap shall be so shaped as to direct condensation away from the tubes.

(b) Suitable means shall be provided to prevent leakage of brine or water from the headers dropping into the milk trough, by shortening the bottom trough, by the use of deflectors at the bottom of the headers, or by other approved methods.

(c) The supports of the cooler sections shall be so located as to prevent drip therefrom reaching the milk.

(d) Regenerative heater-coolers shall be so constructed and maintained as to prevent access of the raw milk to the pasteurized milk. The pasteurized milk shall always be under greater pressure than the raw milk.

(e) All open-surface coolers and open-surface regenerative coolers shall be located in a separate well-ventilated room, or shall be provided with tight-fitting shields, preferably suspended on trolleys. Special exceptions may be made by the board of health when clearly warranted. The board of health is clearly warranted in making exceptions only when the room is so constructed and the cooler is so located as to eliminate all danger of contamination by flies, dust, drip, splash, manual contact, and droplet infection from coughing and sneezing. If the milk surface of the pasteurized-milk cooler is exposed, at least part of the service rendered by pasteurization is nullified, since the milk cooler represents the largest single exposure of milk which takes place at any time in its course. The ideal requirement is, obviously, that pasteurized milk shall not be exposed again from the moment pasteurization begins until the pasteurized milk is in the bottle.

The shields shall conform to the following specifications:

(1) The material shall be of smooth metal which is not readily corrodible.

(2) All seams shall be flush.

(3) All parts shall be readily accessible for cleaning.

(4) The shields shall be tight fitting so as to effectively protect all milk surfaces from fly or dust contamination.

Items (d) and (e) are to be required for all existing equipment. All items are to be required for newly installed equipment.

Item 18p.—Bottling.

Bottling of milk and milk products shall be done at the place of pasteurization in automatic machinery approved by the board of health in such manner as to prevent any part of any person or his clothing from coming in contact with any surface with which milk or milk products come in contact.

The term "automatic machinery" is not interpreted to

exclude machinery operated by man-power, but is interpreted to exclude methods in which the bottling and capping devices are not integral in one machine, and in which capping does not immediately follow bottling.

Public health reason.—Hand-bottling is very apt to result in the exposure of the milk and milk products to infection, which would nullify the effect of pasteurization.

2286 Satisfactory compliance.—This item shall be deemed to have been satisfied if the bottling is done by automatic machinery conforming with the following requirements:

(1) The bottler is of a design which does not require frequent adjustment during operation, thus exposing the milk to danger of contamination.

(2) Bottling-machine supply tanks and bowls are provided with covers which are so constructed as to prevent any contamination reaching the inside of the bottler tank or bowl.

(3) All parts can be readily cleaned.

(4) Bottler floats are so designed as to be adjustable without removing the cover.

(5) The filler pipe of the bottler is provided, as close to the top of the bottler as possible, with an apron or other approved device to prevent water of condensation or drip from fingers reaching the inside of the bottler during float adjustments.

Bottler designs which do not include filler pipes or floats shall not be required to comply with items (4) or (5).

(6) Automatically operated bottler infeed conveyors are provided with suitable overhead shields from the bottle washer to the bottler feed star to protect the bottles from contamination.

(7) All surfaces with which milk comes in contact are of smooth, not readily corrodible material, readily accessible for cleaning.

Item 19p.—Overflow Milk.

Overflow milk or milk products shall not be sold for human consumption.

Public health reason.—Milk or milk products which have come in contact with equipment surfaces which have not been treated with a bactericide or safeguarded after treat-

ment have been exposed to infection, and are therefore dangerous.

Satisfactory compliance.—This item shall be deemed to have been satisfied so long as there is no evidence of the use of spilled or overflow milk or milk products for delivery to consumers.

Item 20p.—Capping.

Capping of milk and milk products shall be done by automatic machinery approved by the board of health. Hand capping is prohibited.*

Public health reason.—Hand capping is apt to expose the milk to contamination.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) All bottlers are equipped with an automatic capping mechanism of a design which does not require frequent adjustment, and

(2) Bottles imperfectly capped are dumped into cans or other containers, and the dumped milk or milk products repasteurized.**

Item 21p.—Personnel—Health.

Every person connected with a pasteurization plant whose work brings him in contact with the production, handling, storage, or transportation of milk, milk products, containers, or equipment shall furnish such information, permit such physical examinations, and submit such laboratory specimens as the board of health may require for the purpose of determining freedom from infection.

The board of health, or a physician authorized by it, shall in each such instance take a careful history, and if such history suggests that such person may be a carrier of or infected with the organisms of typhoid or paratyphoid fever, or of any other communicable disease likely to be

* For definition of "automatic machinery," see Item 18p.

** Attempts to adjust caps by hand, or to remove them and recap either by hand or by machine, inevitably expose the milk in the bottle to manual contamination. The substitution of a pick for the fingers in removing caps does not prevent manual contamination, inasmuch as the point of the pick, which often touches the milk, is exposed to contamination from the fingers, etc.

The above requirement is especially important because a fundamental rule in the case of pasteurized milk and milk products is that they shall be protected against contamination, particularly manual contact, from the time they are pasteurized until delivery.

transmitted through milk or milk products, he shall secure appropriate specimens of bodily discharges and cause them to be examined by the board of health.

No person shall spit in any part of any room, vehicle, or other place used for the sale, storage, handling, or transportation of milk or milk products.

Public health reason.—Investigations of milk-borne diseases have shown that the most frequent source of infection is the presence of the disease organisms in the discharges of milk handlers. The diseases so transmitted through milk include typhoid fever, dysentery, diphtheria, septic sore throat, scarlet fever, and tuberculosis. Spitting may spread disease.

Satisfactory compliance.—In carrying out this item, the following procedure, in addition to the requirement against spitting, shall be required for every employee of pasteurization plants. The examination shall include a history and, where necessary, examinations for typhoid fever, paratyphoid fever, diphtheria, and tuberculosis, blood specimens for typhoid and paratyphoid agglutination tests, nose and throat cultures on Loeffler's blood serum and, in cases showing clinical symptoms of tuberculosis, specimens of sputum. The examination of laboratory specimens shall be considered necessary when the history suggests the occurrence at any time of typhoid or paratyphoid fever, 2287 or recent infection with or exposure to any other disease transmissible through milk supplies.

The following shall be barred from employment in connection with a pasteurization plant:

(a) A person who has not been immunized against typhoid fever within two years, and who shows a positive or a typical Widal, or a person who gives a history of typhoid fever, unless such person is willing to have three sets, or more if required, of specimens of feces and urine collected by the board of health, in a manner prescribed by the board of health, or if any of said specimens prove positive, or

(b) A person who is found to harbor virulent diphtheria organisms, or

(c) A person showing significant clinical or laboratory evidence of active tuberculosis.

Item 22p.—Personnel—Cleanliness.

All persons coming in contact with milk, milk products,

containers, or equipment shall wear clean outer garments and shall keep their hands clean at all times while thus engaged. Smoking in the milk-handling and container-washing rooms of the plant is prohibited.

Public health reason.—The public health reason for this requirement is obvious.

Satisfactory compliance.—This item shall be deemed to have been satisfied if:

(1) The outer garments of all milk handlers, including delivery personnel, are reasonably clean. Inside employees must wear washable outer garments especially provided and used for no other than milk-plant duty; and

(2) The hands of all milk handlers are clean; and

(3) There is no evidence of smoking by anyone in the milk-handling and container-washing rooms of the plant.

Item 23p.—Vehicles.

All vehicles used for the transportation of milk or milk products shall be completely enclosed and so constructed and operated as to protect the milk or milk products from the sun and freezing and from contamination. Such vehicles shall be kept clean, and no substance capable of contaminating milk or milk products shall be transported with milk or milk products in such manner as to permit contamination. All vehicles used for the distribution of milk or milk products shall have the name of the distributor prominently displayed.*

Certified Milk and Milk Products.—Certified milk and milk products are milk and milk products which conform with the rules and regulations of the board of health for certified milk and milk products.

3094. **Dipping—Delivery Containers—Delivery at Quarantined Places.)** The sale of dipped milk and milk products is hereby expressly prohibited. All pasteurized milk and milk products shall be placed in their final delivery containers in the plant in which they are pasteurized, and all certified milk and milk products sold for consumption in the raw state shall be placed in their final delivery containers at the farm at which they are produced. Any milk or milk products sold in quantities of less than one gallon shall be delivered in standard milk bottles; provided, however, that nothing herein contained shall be construed to

* See Item 26r, Grade A Pasteurized Milk specifications.

prohibit hotels, soda fountains, restaurants, and similar establishments from dispensing milk or milk products from sanitary dispensers approved by the board of health.

The delivery of milk and milk products to, and the collection of milk and milk products containers from, quarantined residences shall be subject to the rules and regulations of the board of health.*

An exception may be made where the distributor delivers milk in bulk, in which case the board of health may use its discretion in permitting the practice of transferring milk from one can to another at the customer's place of business.**

The board of health will not permit this practice except in special cases in which it finds the practice justified, and in which it has assured itself that the transferring will take place under sanitary conditions.

No milk bottle or other containers may be taken out of or away from quarantined premises during the period of quarantine or thereafter, until said bottles or containers have been sterilized, and permission has been granted by the board of health for the removal of same.†

* The purpose of this item is to prevent, so far as practicable, exposing the milk to contamination from the time it is placed in its container at the dairy or milk plant until the time it is delivered to the final consumer. The practice, formerly quite prevalent, of transferring milk from a bulk container, located in the delivery vehicle to the household container, either by dipping or by drawing from a faucet, is dangerous because of the opportunity for contamination by dust and flies, or manually.

Another practice on the part of some distributors is the filling of returned bottles along the milk route, particularly at retail depots. This item expressly forbids this practice.

** The exception is intended to cover only deliveries to restaurants, bakeries, and similar establishments, using milk for cooking and manufacturing purposes only. In these cases, it frequently happens that the demand is for a quantity greater or less than the quantity carried in standard cans, thus necessitating the splitting of a full can.

† The use of standard milk bottles for delivering milk and milk products in quantities less than one gallon is required in order to prohibit delivery in such containers as buckets, fruit jars, etc., which may be difficult to wash and to subject to adequate bactericidal treatment, which cannot be filled and capped with the proper equipment used for these purposes, and which it is often difficult to label properly.

The portion of this section which prohibits the serving of milk as milk except in the original containers is designed to prevent contamination of the milk in serving. Such contamination is frequently observed in the dipping of milk from a bulk container into the glass served the customer. The glass frequently overflows and the milk comes in contact with the fingers, and then drips back into the bulk container from which it was dipped. Furthermore, even if milk is poured into glasses from bottles in the kitchen, there is more opportunity for carelessness and consequent contamination than if it is served in the original container, because the transferring is done out of sight of the customer.

3095. Products Shipped from Beyond Limits.) Milk and milk products from points beyond the limits of inspection of the city of Chicago may not be sold in the City of Chicago unless produced and pasteurized under provisions identical with those of this article and approved by the board of health. In order that inspections by the board of health may be adequate, thorough, and effective, the board of health may confine its inspections within such points and territorial limits as the board of health may, from time to time, deem necessary to insure economic and proper supervision, and to safeguard and promote the public health of the city of Chicago.

3096. Notification of Disease.) Notice shall be sent to the board of health immediately by any producer or distributor of milk or milk products upon whose dairy farm or in whose milk plant any case of sickness or any infectious, contagious, or communicable disease occurs.

Whenever a case or suspected case or carrier of

Diphtheria

Dysentery, Amebic

Dysentery, Bacillary and other infective types

Epidemic Meningitis

Paratyphoid Fever

Poliomyelitis, Acute Anterior

Scarlet Fever

Septic Sore Throat

Smallpox

Typhoid Fever

Tuberculosis, "Open Case"

Undulant and Malta Fever

(a) exists in a home of a distributor or of any person who handles, delivers, or produces milk or milk products, the board of health shall be immediately notified, and such person shall immediately be removed from his duties in connection with such handling, delivering or production, and shall not be permitted to resume such duties until granted a release by the board of health, provided that no such person shall live in a home which is quarantined because of the existence or suspected existence of any of the above-named diseases.

(b) occurs on a dairy farm, the board of health shall be immediately notified, and the milk from that farm shall

be immediately excluded from sale within the city of Chicago, until released by the board of health.

Future Dairies and Milk Plants.—All dairies and milk plants from which milk or milk products are supplied to the city of Chicago, which are hereafter constructed, shall conform in their construction to the requirements of the board of health, which shall not be less than the grade A pasteurized milk requirements of this article.

3097. Suspicion of Infection—Procedure.) When suspicion arises as to the probability of transmission of infection from any person concerned directly or indirectly with the handling of milk or milk products, the board of health is authorized to require any or all of the following measures, or any additional measures which it may deem necessary:

(1) The immediate exclusion of that person from milk handling.

(2) The immediate exclusion of the milk supply concerned from distribution and use.

(3) Adequate medical and bacteriological examination of the person, or his associates, and of his and their bodily discharges.

3098. Limit of Time of Sale.) All pasteurized milk, cream, and skimmed milk shall be sold not later than noon of the day beginning twenty-five hours after the day of pasteurization, and shall not be sold at any time after that designated on the label.

All certified milk, cream, and skimmed milk shall be sold not later than the day beginning thirty hours after the time drawn from the cow, and shall not be sold on any day except the day designated on the label.

2289 All pasteurized buttermilk, and cultured buttermilk shall be sold not later than the day beginning forty-two hours after the time of pasteurization, and shall not be sold on any day except the day designated on the label.

All certified buttermilk, and certified cultured buttermilk shall be sold not later than the day beginning fifty-four hours after the time drawn from the cow, and shall not be sold on any day except the day designated on the label.

3099. Penalty.) Any person who shall violate any provision of this article shall be fined not less than five dollars nor more than two hundred dollars for each offense. Each

and every day on which the violation of any of the provisions of this article occurs shall constitute a separate and distinct offense.

2290

Legal Notices.

Rules and Regulations Governing the Production, Processing and Distribution of Vitamin D Milk and Vitamin D Ice Cream Unanimously Passed by the Board of Health at Its Meeting of November 20, 1934.

Regulations Governing the Production, Processing and Distribution of Vitamin D Milk.

1. Permit Required.

No person, firm or corporation shall treat milk to be sold in the city of Chicago for the purpose of increasing its vitamin D content, or placing such milk in the final container for sale, without first procuring a permit from the Board of Health.

The term "final container" shall be construed to mean each bottle, can or other container filled with milk, delivered to the individual consumer or to a hospital, restaurant, hotel, club, or other institution.

The term "unit" when used in these regulations shall be the United States Pharmacopeia X, 1934 unit.

2. General Regulations.

Each person, firm or corporation, producing vitamin D milk, or placing it in the final container shall cause samples of said milk to be collected and examined for its vitamin D content in a properly qualified laboratory at least once during each two month period, or at such time as the Board of Health may deem necessary, and such person, firm or corporation shall furnish the Board of Health, in writing, the results of such examination.

If, at any time, it is found that a proper vitamin D potency is not being maintained in the product, or that the safety of the product is not assured, or that fraud has been practiced, the permit may be revoked forthwith, and the holder thereof, prohibited from further sale of the product within the city.

2291 3. Approved Processes of Fortifying Milk with Vitamin D.

The processes hereby recognized for artificial fortification of milk with Vitamin D are:

- (a) Irradiation with ultra-violet light.
- (b) The addition of an approved vitamin D concentrate in a sanitary manner, and
- (c) The feeding of concentrated vitamin D substances to dairy cows, under suitable conditions.

A. The Irradiation Method.

1. Equipment and Requirements of Operation.

(a) The equipment used for irradiating milk shall be of approved sanitary construction, as required of all other milk processing equipment. Plans for the installation of the processing equipment shall be submitted for approval to the Board of Health by the applicant before the machinery is installed.

(b) The rate of flow of the milk through the irradiator, and the average intensity of the ultra-violet rays upon the milk shall be such as to insure a vitamin D potency of not less than 135 U.S.P. units per quart of milk.

(c) A recording ammeter chart shall show the electrical input to the ultra-violet lamp for the entire time of operation and, on the same chart, the exact running time of the flow of milk to the irradiator.

The recording ammeter charts shall at all times be open to inspection by the Board of Health.

(d) The input milk pump of the irradiator shall be automatically controlled, to operate only when the irradiating lamp is in operation.

(e) Suitable suction fans and ducts shall be provided for removing undesirable gases and fumes from the proximity of the irradiator lamp.

2292 2. Labeling.

Each bottle or other container of the milk treated as set forth in this section shall be labeled with the words "Irradiated Vitamin D," in addition to the lettering required by ordinance, and a seal acceptable to the Board of Health, the name of the patent holder, and the patent num-

ber, may appear on such bottle cap or container in such manner as may be acceptable to the Board of Health.

B. Addition of Substances Containing Vitamin D in Concentrated Form.

1. Any substance containing vitamin D which is proposed to be added to milk shall first be approved by the Board of Health.

The substance containing vitamin D shall be added to the milk only in a manner approved by the Board of Health, in such a way as to preclude contamination, and, in such amount as to yield not less than 400 U. S. P. units per quart in the final product.

2. An accurate record shall be kept of the original invoices of all purchases of the vitamin D concentrate used, of the amount introduced daily, and of the daily sales of the vitamin D milk. These reports shall be open to inspection at all times by the Board of Health.

A daily record of the actual amount of vitamin D concentrate added to milk shall be kept and the signature of the person in charge shall appear thereon.

3. Each bottle or other container of milk, treated as set forth in this section shall be labeled with the words, "Vitamin D Concentrate Added," stating the source, in addition to the lettering required by ordinance, and a seal acceptable to the Board of Health, the name of the patent holder, and the patent number, may appear on such bottle cap or container in a manner acceptable to the Board of Health.

2293 C. Production of Vitamin D Milk, by Feeding Substances Rich in Vitamin D to Dairy Animals.

1. The substance used for feeding dairy cattle shall be acceptable to the Board of Health.

2. Each cow shall be plainly and permanently marked with a number or other distinguishing mark, and an accurate list shall be kept of the following items:

(a) the date of freshing

(b) The date of starting the vitamin D feeding.

(c) The kind and amount of vitamin D substance fed daily and the milk production.

The signature of the person immediately in charge of the feeding shall be placed on the daily record.

A true and accurate record shall be kept of the original invoices of vitamin D substances purchased, and of all sales of milk produced by such cows. The final product shall contain not less than 430 U. S. P. units per quart.

All records kept shall be open for examination at all times by the Board of Health.

3. Milk from cows which have been fed the vitamin D substances for less than twenty days shall not be sold as vitamin D milk.

4. Each bottle or other container of milk, treated as set forth in this section, shall be labeled with the words, "Vitamin D Fed," in addition to the lettering required by ordinance, and a seal acceptable to the Board of Health, the name of the patent holder, and the patent number, may appear on such bottle cap or container, in a manner acceptable to the Board of Health.

2294

Resolution.

The following Resolution was adopted and made a part of the rules and regulations of the Board of Health at its meeting held on July 9, 1935:

Whereas, the enforcement of a new milk ordinance entails the use of the complete force of dairy inspectors, and

Whereas, it is necessary to have each plant in the city of Chicago visited daily to insure a safe milk supply, and

Whereas, it is necessary to give the same degree of inspection to all dairy and pasteurization plants whether located in the city of Chicago or outside the corporate limits, and

Whereas, the number of inspectors available for this work is limited, and

Whereas, the supervision of pasteurization plants many miles from the city of Chicago is exceedingly expensive and inconvenient on account of transportation facilities, etc., to the board of health of the city of Chicago, and

Whereas, it is economically impossible to provide for additional inspectors to properly supervise pasteurization plants any great distance from Chicago, and

Whereas, it is imperative that each pasteurization plant be constantly inspected, and

Whereas, it is impossible to inspect the pasteurization plants outside of the County of Cook with necessary frequency and regularity so that said inspection shall be adequate, thorough and effective, and

Whereas, it has become necessary to use the entire force of inspectors for the inspection of pasteurization plants within the county of Cook; therefore, be it

2295 Resolved: That in the interest of the citizens of the city of Chicago and visitors, in order to insure to all an adequate and reasonable standard of perfection in the pasteurization plants supplying milk and milk products for consumption in the city of Chicago, the inspection of dairy and pasteurization plants shall henceforth be limited and confined to the county of Cook, state of Illinois, and no milk or milk products shall be sold or offered for sale as pasteurized milk or milk products in the city of Chicago unless the same shall have been pasteurized in a pasteurization plant which is located within the boundaries of Cook County, state of Illinois.

Herman N. Bundesen, M. D.,

President, Board of Health.

Louis E. Schmidt, M. D.,

Secretary, Board of Health.

Date of publication:

July 12, 1935.

2296.

Resolution.

The following Resolution was adopted as part of the rules and regulations of the Board of Health at its meeting on November 12, 1935:

Whereas, the present increases in the number of cases of scarlet fever in the city of Chicago is increasing the possibility of milk-borne infections, and

Whereas, it now becomes urgent and necessary for milk and milk products used in the city of Chicago to be dispensed only in unopened original containers, as received from the distributor, therefore

Be it resolved, that all milk and milk products shall be sold, served or dispensed to the final consumer only in unopened original containers as received from the distributor; and no fractional portion or part of any original

package or container shall be served or dispensed for consumption, except for manufacturing purposes.

Herman N. Bundesen, M. D.,
President, Board of Health.
Louis E. Schmidt, M. D.,
Secretary, Board of Health.

2297

Legal Notice.

The following resolution was adopted by the Board of Health, City of Chicago, at its meeting of June 1, 1937:

Whereas, the proper pasteurization of milk is one of the most important factors in the protection against contagious diseases; and

Whereas, certain methods of pasteurization have been heretofore adopted by the board of health as the only accepted and recognized methods of the pasteurization of milk and milk products, which consist of the heating and holding of milk or milk products to a designated temperature for a designated period of time; and

Whereas, it has come to the attention of the board of health that efficient pasteurization of milk or milk products may be secured by increasing the temperature of the milk or milk products now required and at the same time decreasing the length of time at which the milk or milk products are required to be held at that temperature; and

Whereas, exhaustive tests have been made of this process of high-temperature, short-time pasteurization by the New York State Health Department, the Pennsylvania State Health Department, the New York City Health Department and the U. S. Public Health Service, which tests demonstrated that the heating of milk or milk products to 160° F. and holding it to that temperature for fifteen seconds is of equal efficiency to the present requirements; and

Whereas, the process of high-temperature, short-time pasteurization has been tested for a sufficient length of time so that suitable regulations for the control of its efficiency have been promulgated by the U. S. Public Health Service; therefore

Be It Resolved that the terms "pasteurization," "pasteurized," and similar terms as set forth in the ordinances of the City of Chicago, shall also include the process
2298 of heating every particle of milk or milk products to 160° F. and holding at that temperature or above for

not less than fifteen seconds in apparatus of approved design and properly operated in accordance with the requirements for such method of pasteurization as set forth in the U. S. Public Health Service Milk Ordinance and Code of 1936, the ordinances of the City of Chicago and the rules and regulations of the Board of Health.

Herman N. Bundesen, M. D.

President, Board of Health.

Louis E. Schmidt, M. D.,

Secretary, Board of Health.

Date of publication:

June 4, 1937.

2299

Legal Notice.

The following suggested changes in the rules and regulations of the Board of Health relative to the inspection of dairy farms were passed by the Board of Health at its meeting of November 12, 1937:

The standards and requirements for milk and milk products are hereby amended by striking out under Section 3093 of the Revised Chicago Code of 1931, as amended, all of items 2r, 3r, and 4r(a) and substituting therefor the following:

Item 2r—Dairy Barn, Lighting.

A dairy or milking barn shall be required and in such sections thereof where cows are milked windows shall be provided and kept clean and so arranged as to insure adequate light properly distributed, and when necessary shall be provided with adequate supplementary artificial light.

Public-health reason.—Adequate light makes it more likely that the barn will be clean, and that the cows will be milked in a cleanly manner.

Satisfactory compliance.—The milking portion of the barn must be provided with windows or other openings sufficient in area and so arranged as to insure adequate light properly distributed. If glazed windows are used they shall be kept clean. Such sections of the dairy or milking barn where cows are milked should have three square feet of light area for each cow in the barn at any one time. For new construction, four square feet of window space per stanchion is recommended.

Adequate artificial lighting must be provided for night milking. The requirement of adequate artificial light will be satisfied if the milking portion of the barn is so lighted that cleaning and milking operations can be efficiently performed.

2300 Item 3r—Dairy Barn, Air Space and Ventilation.

Such sections of all dairy barns where cows are kept or milked shall be well ventilated and shall be so arranged as to avoid overcrowding.

Public-health reason.—This item is required in order to avoid overcrowding and to insure proper ventilation.

Satisfactory compliance.—This item shall be deemed to have been satisfied when, upon inspection, conditions are such as to result in sufficient fresh air at all times and no overcrowding.

Such sections of all dairy barns where cows are kept or milked should have 400 cubic feet of air space per cow in the barn at any one time.

Stanchions shall be required for the maximum number of cows in the milking barn at any one time, and should preferably be not less than 36 inches wide or such greater width as may be required for the size of the cow in the stanchion. For new construction, it is recommended that the stanchions be preferably 42 inches apart and equipped with metal or other suitable dividers or partitions.

Windows opened for ventilation purposes should preferably be tilted back from the bottom, permitting the top to be open, the sides being boxed, in order to prevent a direct draft on the cows.

Item 4r—Dairy Barns, Floors.

The floors and gutters of such parts of all dairy barns in which cows are milked shall be constructed of concrete or other approved impervious and easily cleaned material, shall be graded to drain properly, and shall be kept clean and in good repair. No horses, pigs, fowl, calves, etc., shall be permitted in parts of the barn used for milking.

4r(a)—Floor Construction.

Public-health reason.—Floors constructed of concrete or other impervious materials can be kept clean more easily than floors constructed of wood, earth or similar materials, and are therefore more apt to be kept clean.

Satisfactory compliance.*—The floors should preferably be of concrete, but may be of other similar impervious material approved by the Board of Health. Cork bricks or creosoted wood blocks, so long as these are impervious to water and permit no pooling of liquids of wash-water, are approved. Manure gutters shall be of concrete.

Earth floors are not approved because they are not deemed impervious.

Only such portions of milking-barn floors to which cows have access shall be required to be surfaced with impervious material. Feed alleys are included in this exemption provided that they are floored with tight wood or its equivalent and protected from washings or drainage from other parts of the barn floor.

2302 Other portions of the barn shall be separated from the milking portion by railings or partitions. If such other portions of the barn are not kept clean and free of dust and objectionable odors, tight partitions are required; in fact, tight partitions are recommended for all cases. It is recommended, but not required, that feed troughs be of smoothed-surfaced concrete in order to facilitate bactericidal treatment when necessary.**

Concrete floors in barns under construction or reconstruction should have curbs where the floor joins the walls. These are desirable in order to promote cleanliness in the angles of the floors and walls and to avoid rotting of wall sills and studs.

* (Note—Plans and directions for laying dairy-barn floors may be found in the United States Department of Agriculture Farmers' Bulletin #1342, and in other publications.)

** Note—Although it has become general practice among modern dairymen to build milking-barn floors of concrete, some dairymen still hesitate to take this step because of the fear of possible injury to their cattle. This objection is answered by the experience of the great number of dairymen who milk on concrete floors. The danger of injury is not great enough to counterbalance the many advantages of a well-drained, impervious barn floor. The floor should have an untroweled surface in order to prevent slipping. When necessary to keep the cattle in the milking barn the floors may be bedded in order to prevent discomfort.)

Gutters shall be required of ample capacity to care for the accumulation of manure between milking periods. The size of the gutter shall be such as to promote cleanliness and improve drainage.

A gutter eight inches deep and sixteen inches wide is preferred and should be provided on new construction. The gutter shall be located at such distance from the stanchion that the droppings of the cows will tend to fall into the gutter.

Herman N. Bundesen, M.D.,
President, Board of Health.
Louis E. Schmidt, M.D.,
Secretary, Board of Health.

2303

Legal Notice.

At the meeting of the Board of Health held on April 26, 1938, the following amendment was adopted:

The standards and requirements for milk and milk products are hereby amended by including the following definition and standard in connection with Sections 3082 and 3090 of the Revised Chicago Code of 1931, as amended:

Soft curd milk is milk, the curd tension of which has been altered by a method of process approved by the Board of Health, so that the curd tension approximates that of human milk. Soft curd milk is hereby declared to be a milk product, and shall comply with the ordinances of the City of Chicago and the rules and regulations of the Board of Health governing the production and sale of grade A pasteurized milk and milk products, including the following regulations:

All soft curd milk shall be pasteurized subsequent to the method or process used in altering the curd tension. The curd-altering method or process, and the pasteurization, cooling and the place in the final container shall be done in a milk plant operating under a permit from the Board of Health, and the entire processes completed in the same plant. All soft curd milk shall bear a label, stating the method or process used in altering the curd tension.

The rules and regulations adopted by the Board of Health governing the production, processing and distribution of vitamin "D" milk are hereby amended to include soft curd milk, milk beverage or skimmed-milk beverage, and all other milk products, in addition to milk, as defined

in the ordinances of the city of Chicago and the rules and regulations of the Board of Health.

Herman N. Bundesen, M.D.

President, Board of Health.

Louis E. Schmidt, M.D.

Secretary, Board of Health.

Published April 29, 1938.

2304 The following is said ordinance as passed:

Be it Ordained by the City Council of the City of Chicago:

Section 1. That Section 3087 of the Revised Chicago Code as amended, be and the same is hereby stricken, and the following inserted in lieu thereof:

3087. License Fees.) Every person selling or disposing of milk or milk products shall annually pay a license fee as hereinafter provided.

Every person selling, offering for sale, exposing for sale, exchange or delivery, or disposing of milk or milk products in and from any milk plant or milk receiving station approved by the Chicago Board of Health, shall pay an annual plant license fee graded according to the size of such establishment, on the basis of five dollars (\$5.00) for each wagon or motor vehicle receiving bottled or bulk milk from said plant for distribution in Chicago.

Such person shall also pay an additional annual milk vehicle license fee for each vehicle used for the delivery or sale of milk or milk products, owned by, or controlled and operated under contract with, and displaying the name of said person, as follows:

On horse wagon or not to exceed one-ton truck or motor vehicle	\$ 10.00
Two horse wagon or truck in excess of capacity of one ton and less than two tons	15.00
Truck of capacity of two tons and less than three tons	25.00
Truck of capacity of three tons and less than four tons	50.00
Truck of capacity of four tons and less than five tons	75.00
Truck of capacity of five tons and over	100.00

2305 Provided, however, that any distributor of milk operating independently of any licensed depot, shall pay an annual milk vehicle license fee, based on the above schedule together with a five dollar (\$5.00) milk vendor

inspection fee for each vehicle operated in the city of Chicago.

Every person selling, offering for sale, exposing for sale, exchange or delivery, or disposing of milk or milk products, which is not intended to be consumed on the premises, in and from any milk plant, such as a milk depot, store, stand, booth, market place or any building or enclosure or establishment of a similar character, shall pay an annual license fee of five dollars (\$5.00).

Section 2. This ordinance shall take effect and be in force from and after its passage and due publication.

Passed—June 10, 1938.

2306 And afterwards, to wit, on the 12th day of May, A. D. 1939, being one of the days of the regular May term of said Court, in the record of proceedings thereof, in said entitled cause; before the Honorable Charles E. Woodward, District Judge, appears the following entry, to wit:

Entered
May 12,
1939.

2307 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—316) * *

ORDER.

On motion of Fred A. Gariepy and Victor P. Frank, attorneys for the plaintiff in the above entitled cause, after due notice to counsel for the defendants; and the court being fully advised in the premises and having jurisdiction of the parties and subject matter, and for good cause shown; this cause is referred to Master in Chancery Jacob Grossman to take the evidence and to report the same together with his conclusions of fact therein and his conclusions of law, to this court.

Enter:

Charles E. Woodward,

Judge.

Dated: May 12, 1939.

2432 And on, to wit, the 25th day of May, A. D. 1939 there was filed in the Clerk's office of said Court a certain Notice, in words and figures following, to-wit:

Filed
May 25,
1939.

2433 IN THE DISTRICT COURT OF THE UNITED STATES.

• • (Caption—316) • •

NOTICE.

To: Fred A. Gariepy, 1 N. La Salle Street, Chicago.
Victor P. Frank, 135 N. Clark Street, Chicago.

Please Take Notice that on Thursday, the 25th day of May, A. D. 1939, at the opening of court, or as soon thereafter as counsel can be heard, we shall appear before the Honorable Charles E. Woodward, United States District Court Judge, in the room usually occupied by him as a court room in the Federal Court, or in his absence before such judge of the United States District Court as shall be hearing motions in his stead, and shall request the entry of an order approving the stipulation heretofore entered into by the parties hereto, by their respective attorneys:

Barnet Hodes,
Corporation Counsel,
Walter V. Schaefer,
Assistant Corporation Counsel,
Charles P. Horan,
Assistant Corporation Counsel,
Attorneys for City of Chicago, et al., Defendants.

Received a copy of the above and foregoing Notice this 24th day of May, A. D. 1939.

Fred A. Gariepy,
Victor P. Frank (WNE)
Attorneys for Plaintiff.

2434 And afterwards, to wit, on the 25th day of May, A. D. 1939, being one of the days of the regular May term of said Court, in the record of proceedings thereof, in said entitled cause, before Honorable Philip L. Sullivan, District Judge appears, the following entry, to wit:

2435 IN THE DISTRICT COURT OF THE UNITED STATES.

• • (Caption—316) • •

Entered
May 25,
1939.

ORDER.

This cause coming on to be heard upon the motion of the defendants for the entry of an order approving the stipulation attached hereto and marked Exhibit 1,

And the court having considered the motion and the stipulation and being fully advised in the premises,

It Is Ordered that said stipulation be and it is hereby approved.

Enter:

Philip L. Sullivan,
Judge.

Dated at Chicago this 25 day of May, A. D. 1939.

2346

EXHIBIT 1.

IN THE DISTRICT COURT OF THE UNITED STATES.

• • (Caption—316) • •

STIPULATION.

In order to expedite the determination of the issues in this case and to conserve the time of the court, the parties to this cause, by their respective attorneys, hereby stipulate:

1. Experiments to be conducted in accordance with technical procedures outlined by the Board of Health of the City of Chicago may be performed under operating conditions at the plant of the plaintiff, Fieldcrest Dairies, (Inc.), to determine: (a) whether the "Pure-Pak" milk container described in the complaint in this case is absorbent or non-absorbent, and (b) whether the immersion of said containers in melted paraffin for periods of time and at temperatures actually employed in commercial production has a bactericidal action; and if so, the extent of the bactericidal action of such immersion.

2. These experiments shall be performed independently by each of the following:

Dr. M. J. Prucha, Professor of Dairy Husbandry, University of Illinois.

2437 Dr. Alex Ray, Professor of Bacteriology, Northwestern University.

Dr. John H. Bailey, School of Medicine, Loyola University.

Reports containing only the statement of the technical procedures employed in these experiments and a detailed statement of the factual results thereof shall be made in writing to the Honorable Jacob I. Grossman, Master in Chancery of the United States District Court, for the Northern District of Illinois, Eastern Division as promptly as practicable after the completion of the experiments. Observers designated by the plaintiff and the defendants may be present at all times during the conduct of said experiments.

3. The conduct of said experiments by any of the persons named shall not disqualify him from testifying as to matters of fact or opinion concerning any of the issues in this case.

4. The right of any party to introduce evidence pertaining to any of the issues in this case and to introduce factual and opinion evidence as to the validity, conclusiveness or merit of any of the experiments conducted pursuant to this stipulation, is neither restricted nor in any way affected by this stipulation.

Barnet Hodes,

Corporation Counsel,

Walter V. Schaefer,

Assistant Corporation Counsel,

Charles P. Horan,

Assistant Corporation Counsel,

Attorneys for Defendants.

V. P. Frank,

F. A. Gariepy,

Attorneys for Plaintiff.

2438 And on, to wit, the 29th day of June, A. D. 1939 there was filed in the Clerk's office of said Court a certain Stipulation, in words and figures following, to wit:

2439 IN THE DISTRICT COURT OF THE UNITED STATES.

• • (Caption—316) • •

Filed
June 29,
1939.

**STIPULATION REGARDING TESTS REQUESTED
BY THE CITY OF CHICAGO PURSUANT TO STIP-
ULATION HERETOFORE APPROVED BY THE
COURT.**

Without either party admitting the materiality of the following stipulation, it is agreed that if the tests requested by the City of Chicago, the procedures for which as revised June 6, 1939, are attached hereto and made a part hereof, were conducted the results would be as follows:

1. If experiment No. 1 is conducted as outlined the dye will appear in the milk.

2. If experiment No. 2 is conducted as outlined some patches of the inside surface of the container will be colored. Usually the dye colored area is along the scored or bent corners, and here and there there may be a little patch on the bottom and along the seam where the bottle is glued with adhesive. Every container which was examined was stained to some extent. The surface of the sides of the container are relatively free from the dye toward the center but there might be patches in the center in one out of ten bottles.

3. If experiment No. 3 is conducted as outlined some of the bacteria will be found under the paraffin still viable. The test organisms *E. Coli* and *B. Prodigiosus* will still be viable after paraffining.

2440 4. If experiment No. 4 is conducted as outlined it will be found that the melted paraffin is free of bacteria.

5. If experiment No. 5 is carried out as outlined, with quart containers, bacteria on the external surface of the filled quart container over and adjacent to the opening will not be transferred into milk during the process of normal pouring from the container.

6. If experiment No. 6 is conducted as outlined it will show that paraffining will not kill all of the bacteria in the paper. Whether paraffining will reduce or increase the number of bacteria in the paper and the extent of the reduction or increase, if any, is not possible to ascertain from this test. If experiment No. 6 is conducted, the paper

board not being artificially inoculated, the results will show that the number of bacteria in the paper board both before and after paraffining is so small that no conclusions can be drawn as to whether paraffining increases or reduces the number of bacteria.

Fieldcrest Dairies, Inc.,

Plaintiff,

By V. P. Frank & Fred A. Gaipey,

Its Attorneys.

City of Chicago, *et al*,

Defendants,

By Barnet Hodes,

Walter V. Schaefer,

Charles P. Horan,

Their Attorneys.

2441 Revised experiments as of June 6, 1939 by Doctors Lloyd Arnold and Fred Tanner to be conducted by three experts agreed upon by Plaintiff and Defendant in Fieldcrest vs. City of Chicago Board of Health relative to the pending paper containers for milk litigation.

2442

I.

Problem: Will fresh fluid milk absorb substances contained in the card-board wall of the finished container?

Outline of technical procedures: Impregnate blank with a dye, form, paraffin and filled with milk under usual commercial conditions.

Detailed technical process:

(1) Dip paper blank in 1% Saffranin aqueous solution, allow to dry, then form and wax in usual manner. At the same time form and wax on untreated blank alternately with dyed blank. Fill with fresh fluid Grade A milk or cream.

(2) Open and examine milk by pouring into glass beaker after 6, 12, 24 and 36 hours storage. Milk will be colored red if dye is absorbed from the paraffined cardboard wall.

(3) Fill quart and pint containers with milk, fill half-pint containers with cream.

(4) Fill 12 of each size, three to be opened and examined at the indicated time intervals after filling by each referee.

2443

II.

Problem:—Will fresh fluid milk be absorbed into cardboard wall of finished container?

Outline of technical procedures:—Each referee to purchase twelve quarts, twelve pints of milk and twelve one-half pints of cream for six days. Store in refrigerator for twenty-four hours. Empty containers, rinse with water until rinse water is free of visible milk. Fill each container with a dye, such as one per cent methylene blue, allow to stand for thirty minutes. Empty and rinse until rinse water is colorless. Open the container by cutting through the card-board and inspect inner surface for dye impregnation of the wall of the container.

2444

III.

Problem:—If the paper is contaminated with bacteria during handling and converting, will the bacteria remain viable after the usual paraffining treatment?

Outline of technical procedures:—Artificially contaminate the surface of blanks with known culture of bacteria; then form and paraffin in the usual manner. Do not fill with milk. Examine the finished empty container bacteriologically for the presence of viable bacteria placed on the surface before waxing.

Detail of technical procedure:

1) Contaminate the blank by smearing bacteria over inner surface, using a dry, sterile swab which has been contaminated with bacteria from an agar surface growth.

2) The following bacteria should be used:

- a) *B. Coli* (Frank.)
- b) *B. prodigiosus*.
- c) *Micrococcus* (Hucker).

3) The finished empty containers should be examined bacteriologically as follows:

a) Three samples—one inch square—to be frequently bent at right angles to break paraffin coating and each dropped into suitable liquid culture media. Sub-cultures to be made after 3, 6, 9, 24 and 36 hours on suitable media to determine the presence or absence of the contaminating bacteria.

2445 4) The same technic should be carried out on con-

taminated blanks without paraffin treatment to prove the presence of the bacteria.

5) Quart, pint and half-pint sized containers should be used. Twelve samples of each should be tested by each referee.

2446

IV.

Problem:—The bacteria in the melted paraffin used for treating the containers.

Outline of technical procedures:—Remove 10 cc. of melted paraffin with sterile pipette. Add drop by drop to 50 cc. of sterile broth in flask. Repeat each 30 minutes from the beginning to the end of the run. This should be done for five separate days. Identification of bacteria if growth appears in broth cultures.

2447

V.

Problem:—Will bacteria on the external surface of the filled container over and adjacent to the opening be transferred to the milk poured from the container?

Outline of technical procedure:—Paint or smear over flap or closed pouring opening and one inch around this area a broth culture of some bacteria not present in milk, such as *B. prodigiosus*, let dry for fifteen minutes, open and pour out 200 cc. of milk into sterile beaker. Pipette ten samples of 10 cc. each from this beaker into sterile test tubes and incubate forty-eight hours. Observe after twelve, twenty-four and thirty-six hours of pigmentation.

One-half, 1 pint and quart sized containers to be used. Twenty-four tests should be conducted by each referee on each size of these three sized containers.

2448

VI.

Problem:—Determine the bacterial content of unparaffined and paraffined finished container.

Outline of Technical Procedure:—Disintegrate printed blank and finished container from same paper source and determine number of bacteria per gram of paper weight.

Quarts, pints and half-pints should be used. Twelve samples of each size, both blanks and paraffined containers, should be examined by each referee.

2449 And afterwards, to wit, on the 29th day of June, A. D. 1939, being one of the days of the regular June term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable Charles E. Woodward, District Judge, appears the following entry, to wit: Entered
June 29,
1939.

2450 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—316) * *

ORDER APPROVING STIPULATION WITH RESPECT TO TESTS REQUESTED BY THE CITY OF CHICAGO.

The parties this day having filed herein a stipulation regarding tests requested by the City of Chicago pursuant to stipulation heretofore approved by the Court, to which stipulation is attached the revised procedures suggested by the defendants as revised June 6, 1939, and the Court having examined said stipulation, approves the same.

It is Ordered, that by entering into the said stipulation and by the Court's approving said stipulation, none of the parties hereto waives any objection which he or it may have to the materiality and relevancy of any of the facts contained in said stipulation, and it is further Ordered, that none of the parties hereto shall be precluded by said stipulation from offering further evidence on the subject referred to therein.

Charles E. Woodward,
United States District Judge.

Approved:

Barnet Hodes,
Walter V. Schaefer,
Charles O. Horan,
Attorneys for Defendant.

V. P. Frank & Fred A. Gariepy,
Attorneys for Plaintiff.

Jacob I. Grossman,
Master in Chancery.

2812 And on, to wit, the 27th day of April, A. D. 1940 there was filed in the Clerk's office of said Court a certain Transcript of Testimony (consisting of three volumes) referred to in the Master's Report, and taken before the said Master, in words and figures following, to wit:

1 IN THE DISTRICT COURT OF THE UNITED STATES.
• • (Caption—316) • •

Proceedings had and evidence taken in the above entitled cause before the Honorable Jacob I. Grossman, Master in Chancery of said Court, in the United States Court House, Chicago, Illinois, beginning at 10 o'clock a. m., Wednesday, May 31, 1939, pursuant to order of reference and due notice had.

Appearances:

Frederick A. Gariepy,
Owen Rall, of counsel,
on behalf of plaintiff;

Barnet Hodes, Corporation Counsel,
City of Chicago, by
Walter V. Schaefer and Charles P. Horan,
Assistants Corporation Counsel,
on behalf of defendants.

2-3 Mr. Schaefer. Before we proceed with the taking of the testimony, there is a matter I would like to call to the Master's attention.

At the outset of the Fieldcrest case, before the case was at issue, I was instructed by the Board of Health to endeavor to have certain tests made, under the sanction of the Court. With that in mind, or as soon as the case was at issue, or very shortly thereafter, I arranged that counsel for the plaintiff and ourselves should appear before Judge Woodward in chambers and explain that situation to him and ask him to arrange a pre-trial conference.

Judge Woodward set that pre-trial conference for an afternoon a few days later. On the morning of the day when that conference was to be held a motion for change of venue was filed, and thereafter there was no further progress in the case until that motion was heard. The hearing on the pre-trial conference was continued indefinitely.

When the motion was disposed of, I took the matter up again with counsel for the plaintiff, and at that time he suggested that in lieu of a pre-trial conference the matter might be expedited if it were handled by stipulation.

4 Accordingly, I prepared a stipulation, which provided for the conduct of experiments, in accordance with technical procedures outlined by the Board of Health, by three men, who were agreed upon by the parties, two of whom were suggested by the plaintiff and one by the defendants.

The stipulation contained reservations to the effect that the conduct of the experiments by any of the persons named would not disqualify those persons from testifying as to matters of fact or opinion concerning any of the issues in the case, and it contained this further reservation or provision:

"The right of any party to introduce evidence pertaining to any of the issues in this case and to introduce factual and opinion evidence as to the validity, conclusiveness or merit of any of the experiments conducted pursuant to this stipulation, is neither restricted nor in any way affected by this stipulation."

The thought there being to reserve to the plaintiff primarily the right to attack the validity of the tests.

5 Thereafter I received a letter from Mr. Gariepy, representing the plaintiffs, which led me to doubt that the experiments would be conducted in accordance with the stipulation. I replied to that letter and asked him precisely what his intentions were. Then the stipulation was approved by the Court and the outline of procedure was submitted to the plaintiff.

After the outline of procedure was submitted, Mr. Gariepy called me with respect to one of the experiments, which contemplated the use of certain bacteria, streptococci bacteria, tubercular bacteria and so on, and said that his people felt that the use of those bacteria might be hazardous if the experiments were conducted in the actual milk plant itself. He suggested that other bacteria, which would have an equivalent thermo death-point, might be substituted. I agreed, and we decided to have a conference of the persons who were to conduct the experiments, to determine upon the bacteria which were to be substituted.

Mr. Gariepy also said that in his opinion the tests would take a long period of time, a matter of months, and I told

him I had been advised the tests could be conducted
6 within a period of one month.

We arranged that a conference be had, which was held Monday. At that conference Dr. Bailey, the man from Loyola University, who was suggested by the defendants, was present. Neither of the persons suggested by the plaintiff to conduct the experiments was present, but in lieu of those men Dr. Tanner of the University of Illinois and Dr. Sanborn, both technicians, were present on behalf of the plaintiff.

Only the first test was discussed. That test was to determine this question: Will fresh fluid milk absorb substances contained in the cardboard wall of the finished container? The test contemplated dyeing the paper or dipping the paper in what is known as a safranin solution, which I am told is a red dye, and then paraffining the paper, running through the container, filling it with milk and then opening the container to determine whether or not the dye was absorbed into the milk.

We got no further than the discussion of that test, because the plaintiffs took the position that the answer to that question was not relevant to the matter at issue in this case, and they further took the position that that question
7 had been answered to their satisfaction.

Therefore, I asked whether or not that attitude would persist with respect to all of the tests enumerated, being six. They said yes, that would be their attitude with respect to all of the tests. I then suggested there would be no further point in discussing it; it looked as though the stipulation would not be complied with.

That afternoon I called Judge Woodward and I told him that we were having difficulty in connection with a stipulation which had been entered into between the parties. He suggested that I bring the matter to your attention and you dispose of it, or, if you felt that you could not dispose of the matter satisfactorily, we could bring it to his attention again.

Now, that was what I wanted to have decided. We regard those tests and the Board of Health regards them as of considerable importance. The question of relevancy, of course, is saved here by stipulation. The stipulation was deliberately drawn to accomplish that result. Now we are at a stalemate.

Mr. Gariepy: Are you through, counsel?

Mr. Schaefer: Yes.

8 Mr. Gariepy: First, I want to follow up counsel's statement for and on behalf of the defendants, by answering for the plaintiff as follows:

The procedure outlined was not delivered to us until three or four or five days after the stipulation was drawn, we assuming at the time that the procedure would be the proper procedure in accordance with the practice as applied by experts in performing the tests, and the stipulation was signed with that thought in mind.

When we got the procedure I immediately contacted the experts in the case, and the sum and substance of their answer was that we have already performed all of the tests outlined by the City of Chicago for the past year or year and a half and suggested by the Board of Health in their procedure, and we have the answer to these questions all ready, and it is going to take a period of three or four or five or six months to perform these tests over again, unless you want to do them superficially, and it is going to involve expense.

In fact, the plaintiff performed these tests during the last two years and submitted them to the defendants long before this lawsuit was filed, in good faith. The plaintiff
9 tiff did not see fit to perform these tests again, to satisfy the City of Chicago, as they had already secured the information to be shown by the tests.

No. 2; the next answer is that the whole problem suggested by Test No. 1, as mentioned by Mr. Schaefer a minute ago, is answered by all of the research work combined and not by one test in here. In other words, this Test No. 1 would not be a satisfactory test, nor would it bring out a satisfactory report to the Master or to the experts here involved concerning the issues on this container.

Next, there has been nothing said about this matter of expense. The plaintiff does not see any reason why it should duplicate the expense it has been put to in the last two years, to satisfy the Board of Health on this same matter.

The next is that the tests were suggested to be made at the plaintiff's plant. As I wrote Mr. Schaefer in reply, we would not allow these dangerous bacteria to enter the milk plant. I do not think Dr. Arnold, or the Board of Health, that proposed this procedure ever thought it was

contemplated that we should perform those tests with
10 milk out at the plant and run the danger of having
the dangerous bacteria there.

For that reason I wrote Mr. Schaefer back that we had performed these same tests before with a lower thermo death-point in the bacteria,—with the same thermo death-point, but less potent bacteria, and therefore we did not see fit to use this typhoid and these other bacteria suggested in the procedure.

In 1937 and 1938, when these tests were given to the City of Chicago, or the results of these tests, we asked, by repeated letters, Dr. Bundeson and the Board of Health to give us a reply to the substance of what was given to them in the data, and no objection was ever made to what these tests showed or the sufficiency or insufficiency of these tests, until we got into this litigation and it was suggested that the Board of Health now find the procedure under which the tests be made. It was 1937 we submitted this data.

I want to correct a statement in here; that the organisms used by the plaintiff in performing these six tests suggested by the Board of Health were at a higher thermo death-point than those suggested in the tests to be
11 used with the various bacteria outlined. So we did not see where we were going to accomplish anything, except just to repeat considerable expense.

Now, the plaintiff has stood ready at all times to allow the Board of Health and the City of Chicago to make any and all tests that they see fit. If they have not done so in the last two years, that is their own problem. We have been after them for the last two years to give us an answer as to what they want us to prove up as to the susceptibility of the container and its use. Until this lawsuit was drawn and until Mr. Schaefer and I got into a conference on this matter, there was never any offer made by us or any information asked that we did not give to them.

It seems to me it comes with ill grace, after two years of waiting and after we have filed a lawsuit, to satisfy their curiosity concerning certain tests that we have already run and spent substantial money on tests that we have already made, duplicating information just to satisfy them.

If the Board of Health wants samples of the container

or samples of the paraffin, we will give it to them at any
12 time, and they can go up there and perform their tests,
and our experts will report according to the same tests.

The Master: Why was this stipulation entered into?

Mr. Gariepy: The stipulation was entered into because, assuming at the time that these tests were dangerous tests, we could not think of performing them with the bacteria suggested, and there has been no suggestion by the Board of Health that we use some other bacteria since that time. There has not been one come-back in that regard.

The Master: I don't quite understand you yet. You have a stipulation which contemplated the conducting of certain tests?

Mr. Gariepy: Right.

The Master: Now, you knew at the time you entered into that stipulation that all of these experiments which you now mention had been conducted at some previous time?

Mr. Gariepy: Yes.

The Master: Then why was the stipulation entered into?

Mr. Gariepy: The stipulation was entered into to, first, narrow the issues in the case, thinking that we would
13 get down to one or two or three or four different issues that the Board of Health wanted satisfied. When the stipulation was entered into we did not have the procedures and tests before us. You see, we were gambling blindly and we relied on getting reasonable tests, other than what we had submitted to them. Having set up the answers already to the Board of Health in 1937 and 1938 and not getting a reply, we assumed we were going to get something from them in the way of tests that he had not covered. Had we known this before we would have told them that we had given them the answer already. We have no quarrel with the fact that three days after the stipulation was entered into along came the procedure, but the procedure was not mentioned before.

The Master: But the stipulation was broad enough to include any and all tests.

Mr. Gariepy: Yes.

The Master: So that what you are virtually doing now is to state that the stipulation was entered into under a misapprehension as to the type of tests to be conducted.

Mr. Gariepy: We did not know the type of tests to
14 be conducted.

The Master: Although you did make a broad and general stipulation.

Mr. Gariepy: Yes.

The Master: Which might conceivably have included any all tests.

Mr. Gariepy: Yes.

Mr. Schaefer: The first paragraph in the stipulation indicates the scope of the experiments to be performed.

The Master: In effect, you are asking to be relieved of this stipulation; should the stipulation be considered broad enough to include tests such as you mentioned.

Mr. Gariepy: Such as we have already made.

The Master: Yes.

Mr. Gariepy: And with this further condition; that the City of Chicago and the Board of Health may go up and perform all of the tests and we will give them all of the cooperation they want, to satisfy them on these tests they are asking for.

The Master: Has the City of Chicago suggested any tests at all, such as you contemplated when you entered into this stipulation?

Mr. Gariepy: Except these tests. The only tests
15 that have been suggested are these outlined, that were received three days after the stipulation was made. No other tests or other remarks or other suggestions have come from the City of Chicago.

The Master: No, I am simply asking the question; in the tests they propose to conduct are there mentioned any tests other than those which you say you have already conducted?

Mr. Gariepy: No.

The Master: They simply want to go over the same ground, in your opinion?

Mr. Gariepy: Yes. We have covered all of those tests.

The Master: If that is true, is there any way of your using, Mr. Schaefer, the reports of the experiments they have submitted already, and checking them?

Mr. Schaefer: We do not agree as to that fact. If we did, of course, we would not ask that these experiments be performed. We are not indulging in futile gestures. The men named have done work for the plaintiff, two of them, Dr. Prucha and Dr. Day. We do not particularly

care who does them, but we want them done under actual operating conditions. From our survey of the literature, we feel that these tests have not been performed, and now we want them performed. The nature of the tests is clearly indicated in the first paragraph of the stipulation.

The Master: The only difference, then, between you is as to whether these tests have been conducted under actual operating conditions, is that correct?

Mr. Schaefer: Partly that, and partly we want these tests observed.

The Master: By your representatives?

Mr. Schaefer: It is in the stipulation that either party may have observers present.

The Master: Two of the observers are the people who have actually conducted these experiments?

Mr. Schaefer: No, I do not mean observers. I mean these persons, as I visualize the effect of the stipulation, are impartial persons who are performing tests for the benefit of the court. We propose that these tests be used in evidence, that the results of the tests be reported to the court. I mean that, in addition to those persons, plaintiff and defendants may have observers present when the tests are conducted.

The Master: Would you regard the stipulation as having effect of an agreement that any evidence in the possession of either party bearing on the subject of experiments is to be excluded, if not conducted in accordance with the stipulation?

Mr. Schaefer: Certainly not. The stipulation makes that perfectly clear in the next to the last paragraph.

The Master: They have the right to introduce the evidence of these experiments that they have conducted?

Mr. Schaefer: Yes.

The Master: And if this stipulation is not carried out, then they would simply introduce their evidence and you would have the right to cross-examine and introduce any other evidence?

Mr. Schaefer: Yes.

The Master: Do you insist now upon the carrying out of this stipulation.

Mr. Schaefer: Yes, sir, I do.

Mr. Garipey: If the Master please, on behalf of the plaintiff we do not propose to bring in the pathogenic bacteria and dangerous bacteria suggested by the Board of Health.

Mr. Schaefer. That is entirely taken care of and was taken care of by the phone conversation between Mr. 18 Gariepy and me. What these men met for Monday was merely, I thought, to determine upon the other bacteria which was to be substituted.

Mr. Gariepy: Bacteria was never discussed Monday, not a word.

Mr. Schaefer: We never got that far. We didn't get by Test No. 1.

Mr. Gariepy: And by reason of your statements we are not going any further, if we do not satisfy Test No. 1 of the Board of Health. It was at that point the meeting broke up, as you suggested. We never discussed bacteria at all.

The Master: As I understand, Mr. Schaefer, you have agreed to conduct these experiments with bacteria not as virulent as those you originally mentioned?

Mr. Schaefer: That is quite right.

The Master: And you think that the substituted bacteria, if used at the plant, would have no harmful effect whatever?

Mr. Schaefer: I think the technicians in the field can easily describe bacteria, define bacteria and name bacteria that will satisfy everybody. I do not regard that as a serious matter.

19 Mr. Gariepy: The performing of these tests at the plant would be highly out of order; first, because the equipment is not there, the laboratory equipment to perform these tests, and, next, it is highly dangerous.

The Master: Did not you agree to this?

Mr. Gariepy: Not this kind of tests at this plant.

The Master: You agreed to tests at the plant?

Mr. Gariepy: Yes, but not this kind. The tests were not given in the stipulation. If you look at the stipulation you will see the tests were not given. Three days after the stipulation came along, everything was entirely different. If the procedure was outlined in the stipulation, we never would have entered into it.

The Master: What about the expense of conducting these experiments?

Mr. Schaefer: The matter of expense has been agreed upon by Mr. Gariepy and me orally, and the agreement was that the expense should be split down the middle. That is, they have named two people, but we would take the expense of the three of them and they pay half and we pay half.

20 The Master: Do you agree that it would take five or six months to conduct the experiments?

Mr. Schaefer: No.

The Master: How long do you think it would take?

Mr. Schaefer: We say not over a month.

The Master: Would you agree in case the experiments are not completed within a month that the matter be abandoned?

Mr. Schaefer: That depends on when they are undertaken. You mean regardless of when they are undertaken, if they are not completed within a month from the date they begin?

The Master: Approximately a month, rather than five or six months.

Mr. Schaefer: Oh, yes, surely. That is, from the date they begin. If the Master will look at the tests he will see there is no advantage being taken of anybody.

Mr. Gariepy: Furthermore, I am advised by the experts who have been over these tests that it takes eight to ten weeks to bring out the tubercular bacilli. If it takes that long for that to happen, how are we going to finish it in four weeks? We don't want a superficial test and superficial report. We want a real one.

21 The Master: That might go to the weight that would be given to the test.

Mr. Gariepy: Wouldn't that be a sort of a comedy and mockery to go into a four weeks test and hand you something that the experts themselves say is not being done properly. We don't want that.

The Master: The City experts say it can be done in a month.

Mr. Gariepy: They tell me no.

The Master: That is, your experts.

Mr. Gariepy: But they have been over it. They are in a better position to speak with authority than the experts from the City of Chicago, who are guessing.

The Master: Is there anything more to be said about this subject?

Mr. Schaefer: Nothing more here.

Mr. Gariepy: Nothing more.

The Master: I will consider the matter. Let us go ahead with the witness.

Just a minute before we do that, let me ask another question. With reference to these stipulation matters you

are talking about, if it should be held that the stipulation should not be carried out and you were permitted to produce all of the evidence which you have in your possession and the city should then ask to conduct the experiments, which would result in taking up considerable time, what would your position be then?

Mr. Gariepy: We think that the city, Master, has had two years to perform all of the tests they wanted concerning this thing, and since we have given them data in 1937 and 1938, their request for delay or their causing delay in the matter here pending is unwarranted.

The Master: But there was no suit pending two years ago.

Mr. Gariepy: But there was data submitted to the city on all of these tests.

The Master: They might not have been contemplating that there was a suit to be brought.

Mr. Gariepy: We are not responsible for that.

The Master: It may not be incumbent on them to go ahead and try a lawsuit just because you took something up with them two years ago. Now, you brought a suit here recently and they may conceivably say that they were under the impression from the stipulation that certain experiments were to be jointly conducted, and, at the last moment, according to them, you do not want to go ahead with that stipulation. They might very well say, "All right; we will go ahead with the experiments ourselves and invite you to be present, if you wish. We think that the conduct of those experiments is very essential to a proper disposition of this case, and that since an ordinance of the City of Chicago is involved, it is important that the evidence be very complete." Then they might say, "It is necessary to do this and it will take about a month to carry out the experiments." You say, "It might take more than that." They might take you at your word and say, "We think it is necessary to carry out these experiments, but we are offering you an opportunity at this time to participate and you do not want to take part at this time. So we will go ahead and do them ourselves and invite you to be present, if you desire."

Now, wouldn't that be a pretty strong showing by them?

Mr. Gariepy: Yes, if the city wants to go ahead and perform these tests, as we have said at all times they are

perfectly able to do, let them go ahead; we will give
24 them such data as they request from us, but they will not perform these tests with this bacteria in this plaintiff's plant. We do not propose to have this plaintiff's plant endangered by the City of Chicago and Board of Health in performing those tests out there.

The Master: Is it possible to perform these experiments without dangerous bacteria?

Mr. Gariepy: We say that it is, Master. We have performed them without dangerous bacteria, but those having a higher thermo death-point.

The Master: What if they say they are willing to take substitute or equivalent bacteria, but they want to have the experiments conducted at your plant?

Mr. Gariepy: No. We have not the equipment at the plant to perform them. The plant is a milk plant and not a laboratory. We never expected to have a laboratory at the plant to perform the tests.

The Master: Suppose they wanted to go ahead and conduct the experiments under actual operating conditions and supply the equipment and invite you to be present while the experiments are being conducted and it is necessary to take some time to have those experiments conducted, would you object to the delay?

25 Mr. Gariepy: I would rather not answer that question until the city gives me an outline of what their procedure is and what their wish is and where they are going to take them and how they are going to take them. I am not going to prejudge what the city is going to do or what their intentions are, in view of what happened on these six tests. We are not going to have tests conducted at our plant which would prohibit us from conducting our business out there. If they would just outline the procedure they propose to follow, we will give them a definite answer.

The Master: I have not ruled yet on the question as to whether or not the stipulation is to be followed or complied with. I just asked that question so you might consider answering it along with your other matters.

Mr. Gariepy: I would not attempt to until I see the data from the city, with such modifications as they wish to submit.

The Master: Let us go ahead with the witness now.

26 JOHN RAYMOND SANBORN, was called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. State your name, please.

A. Joseph Raymond Sanborn.

Q. And your address.

A. Geneva, New York.

Q. What is your business or occupation?

A. Bacteriologist.

Q. Of what school or schools are you a graduate?

A. Massachusetts State College.

Q. What degree did you receive from said college?

A. I received the degrees of Doctor of Science and Doctor of Philosophy.

Q. Have you done any research work since your graduation?

A. Yes.

Q. What research work have you done, and where and when?

A. I have done graduate work at the Massachusetts State College on the subject of cellulose fermentation and the study of cellulose bacteria.

Q. When was that done, Doctor?

A. That was from 1920 to 1924.

27 Q. Have you done any teaching in the matter of bacteriology since that time?

A. I taught bacteriology at McDónald College, McGill University, from 1924 to 1928, and did research work as well as teaching in the organisms associated with cellulose and food and dairy bacteria and medical bacteria.

Q. Doctor, have you had any experience in performing research work for the International Paper Company?

A. Yes.

Q. What experience was that and what type of research work?

A. I went to the International Paper Company as a research bacteriologist in 1929.

Q. For how long?

A. I stayed there in that capacity as research bacteriologist for four years. During that time I was in-

vestigating sanitation, sanitary problems of pulp and paper making, sanitary packaging of foods, sanitation of paper wrappers and containers for foods and the general hygienic condition of paper products and the elimination of bacteria from pulp and paper mills.

Q. Do you know Arthur D. Little, Incorporated, Cambridge, Massachusetts?

A. I was employed as research bacteriologist at 28 Arthur D. Little, Incorporated, consulting engineers, at Cambridge, Massachusetts, for two years, 1934 to 1936.

Q. And in what subject did you perform research work there?

A. The subjects of research were food investigations, food preservation and problems of pulp and paper mill sanitation and in the packaging of perishable foods.

Q. With regard to the packaging of perishable foods, will you name the various types of foods and the various types of packaging that you refer to that you performed research work on that are used in common every-day experience?

A. I have done research work on waxed paper wrappers used in the packaging of meats and other perishable foods. I have investigated the subject of food containers, including containers for milk and cream, buttermilk and other dairy products, ice cream, cottage cheese; trays, paper trays for foods used in delicatessen shops, such as potato salad and similar foods; bottle caps and hoods; fibre cans for ice cream; and paper boxes used in the packaging of dry foods, such as cereals.

Q. What is your present connection or your present position in the way of research work with the State of New York?

29 A. I am in charge of the investigation of the sanitation of paper wrappers and containers, in the employ of Cornell University, with the laboratories at the New York State Experiment Station, Geneva, New York.

Q. And by whom are you paid for your services?

A. I am paid by Cornell University.

Q. And for whom are these services performed at the New York Experiment Station at Geneva, New York?

A. These investigations are performed in the interest of the consumer.

Q. And by the consumer to whom do you refer or mean?

A. I refer to the consuming public.

Q. How long have you been so connected with the New York State Experimental Station at Geneva, New York, doing this research work?

A. Since February, 1937.

Q. And since February, 1937, have you performed various tests and performed certain research work in connection with the single service paper container used for milk?

A. Yes, I have.

Q. How much time have you devoted, since coming to the New York Experimental Station at Geneva, to such work?

30 A. My entire time has been devoted to this investigation.

Q. What do you do with the results of your investigation, in the way of giving out the same to the public?

A. The material, the results of these investigations become public property, through public addresses at scientific meetings, through publications on public health, and scientific journals.

Q. Is there anyone associated with you at the New York Experimental Station at Geneva in performing this work?

A. Dr. Robert S. Breed, who is chief of the division of bacteriology at the New York State Experiment Station and who supervises the investigation. I am in direct charge of the investigation, and I have three assistants.

Q. How many articles and publications have you issued or put forth from the New York Experimental Station, as a result of your work and findings in this research?

A. I would estimate that I have made approximately fifteen addresses since going to the station in my present capacity, and have probably published twenty to twenty-five articles.

Mr. Gariepy: Mr. Reporter, will you mark this pamphlet Plaintiff's Exhibit No. 12 for identification.)

31 (The pamphlet referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 12 for identification.)

Mr. Gariepy: I use that number, Master, by reason of the fact that depositions are being taken and we left off at No. 11, and we want to keep them in sequential order.

The Master: Any objection?

Mr. Schaefer: I haven't seen it yet, Master.

The Master: For what purpose are you marking this?

Mr. Gariepy: To show the work of this man and the extent of his work, concerning the subject matter of inquiry here.

The Master: Why encumber the record with a number of articles which he has written? He states he has written them. Why put all of the articles in?

Mr. Gariepy: Because several of the items contained in this exhibit and in these articles will be covered in cross-examination, in a way, and they ought to be before the Master. They are pertinent as to a number of conditions, the type of the containers, the extent of the containers and the tests the witness has made.

The Master: Do you stand ready to adopt the text in that article as pertaining to his testimony?

Mr. Gariepy: I do.

32. **The Master:** That is different. If you are merely introducing that as illustrative of the work he has done, that is one ground. If you are trying to introduce it in lieu of testimony by the witness, that is another ground. But you have marked it. You have not offered it yet. Go ahead.

Mr. Gariepy: Q. Doctor, I show you Plaintiff's Exhibit No. 12 for identification, and ask you if you ever saw it before.

A. Yes, sir, I have.

Q. What is it?

A. That is a paper giving the results of an investigation conducted by myself and reported last fall at the annual meeting of the International Association of Milk Dealers, in Cleveland, Ohio.

Q. Have you ever received any request from the Board of Health of the City of Chicago, Dr. Bundesen as acting president, previous to the institution of this suit, or Dr. Black, for any information concerning your findings in research work in the field of single service containers?

Mr. Schaefer: That is objected to.

The Master: Sustained.

Mr. Gariepy: Q. Have you ever had any communications, Doctor, from the City of Chicago, the Board of Health, in regard to research work on the containers?

33 **Mr. Schaefer:** I object.

The Master: Sustained.

Mr. Gariepy: Q. Doctor, the substance of Exhibit No. 12, that you have just testified to, is taken from your own ex-

perience and your own examination and research work, is it?

A. Yes.

Mr. Gariepy: I offer in evidence Exhibit No. 12.

Mr. Schaefer: I object to the admission of this exhibit in evidence; first, because it will encumber the record, but the primary reason for my objection is this: As Mr. Gariepy says, he is introducing this exhibit to show the use of paper containers throughout the United States of America. I had not noticed when I first glanced at it, but there is a map here that purports to show the cities in which the paper milk bottle was in use throughout the United States.

There are on page 2 two figures showing types of paper milk containers. That is the question which is now pending before Judge Sullivan, raised on the pleadings. It has not been decided in the Ex-Cell-O case, in which a deposition is being taken this morning, or in the American Can Company case.

Our position as to the issues in this case is this:

34 First, does the ordinance of the City of Chicago, properly construed, prohibit the use of paper containers for the distribution of milk in milk bottles, and, second, if that ordinance is properly construed as a prohibition, is the prohibition reasonably related to the public health and general welfare and so on, that is, is it a reasonable exercise of the police powers?

On that question we submit that evidence as to the use or non-use by any other municipality is completely immaterial.

Let me give an example that may make our position clear. Assume that the City of New York permits sound trucks to operate through its business district and assume that the City of Chicago has adopted an ordinance which prohibits the use of sound trucks in highly congested areas. On a trial involving the validity or the reasonableness of the Chicago prohibition, I think no one would contend that the New York permission is material.

The question here is whether this container is a proper container for the distribution of milk. Whether officials of other municipalities so regard it is not material at all.

What we are interested in is this container, what it
35 does or does not do when milk is placed in it. What another municipality, a legislative body or an ad-

ministrative official may think of this paper container is entirely immaterial here.

It seems to me that you could not attack the Workmen's Compensation law of Illinois, for example, on the ground that in Ohio they did not have such legislation.

The Master: Is that the only ground on which you object to this exhibit, the relevancy, for the reason mentioned?

Mr. Schaefer: I hate to take the time to read it now, and yet I do not have in mind word for word what it contains.

The Master: Do you prefer to have the witness give his testimony on the stand, other than by means of a written document?

Mr. Schaefer: I would much prefer that.

The Master: I will sustain the objection on the latter ground. I am not ruling on the matter of relevancy at this time. I would rather be inclined, if that were the only ground, to permit the evidence to be taken and argue later the question of the relevancy, unless evidence of the same sort would be taken in such volume that it would be
36 necessary to decide the point during the course of the hearing.

Mr. Gariepy: I take it the Master sustains the objection to the offer of Exhibit No. 12, because of the fact that the material contained in Exhibit No. 12 can be given by the witness, rather than by this document, Exhibit 12?

The Master: Yes.

Mr. Gariepy: Counsel just said a minute ago that we did not want to encumber the record. That means encumbering the record.

The Master: Let us not argue that point.

Mr. Gariepy: All right. I just wanted to point that out.

The Master: He did mention that in that exhibit there was some fact stated that may well be said to be based on hearsay. I just asked him if that was the only ground. For instance, he stated there in what cities containers are being used. Unless this witness had his own knowledge on the subject, it might very well be that he secured that by correspondence or from others. Then there might be a question as to whether the containers are the same, and so on. That is one thing that occurred to me while he was reading it, and I guess he had that in mind when he stated
37 his objection, but he did not use the word "hearsay."

He did mention that when he first opened up the discussion.

Mr. Gariepy: Q. Dr. Sanborn, will you tell, from your own knowledge, the cities and villages where the single service paper milk containers are being used, in the United States?

Mr. Schaefer: I object to that.

Mr. Gariepy: What is the ground of the objection?

Mr. Schaefer: The enumeration of those cities is immaterial.

The Master: For the reason stated?

Mr. Schaefer: Yes. Now, I want to point out or elaborate what I just said a moment ago, with this thought: If evidence of use in other municipalities is admissible, so is evidence of non-use.

Mr. Gariepy: We have no objection to your putting in all the evidence you want of non-uses.

Mr. Schaefer: We cannot determine the issues here presented, the reasonableness of this ordinance, by a count of municipalities in which paper containers are used or not used. What we have to do here is to analyze this container. That is what we are interested in doing. If the prohibition is not related—

38 The Master: I get your point on that. At the present time I would overrule the objection, without prejudice to your renewing it and making a motion to strike. Furthermore, if the evidence on that subject becomes too voluminous and it is necessary to decide the point while we are going ahead with the testimony, we may stop and hear arguments on that subject.

Mr. Schaefer: In order to save time, then, may it be understood that the objection need not be renewed to each question directed to that point?

The Master: You may make a motion to strike at any time you wish, without prejudice.

Mr. Gariepy: Q. Doctor, the last question was for you to enumerate the cities and villages in the United States that you knew of that were using the single service paper container in the sale of milk.

A. New York City is using the paper container for milk and cream, and a great many cities and towns in the so-called metropolitan area of New York City.

Q. How many of those do you know of?

A. I know of about forty. I have not visited each one of those towns, but I have received containers from a great many of them and my intimate knowledge of containers

from each one of those might number possibly ten, from
39 having actually seen the operation or seen the containers.

Q. Name the cities and villages in the United States that you actually know of that are using the single service container?

A. Boston and numerous suburban cities and towns around Boston, such as Quincy, Cambridge, Somerville. Baltimore, Philadelphia, Washington, D. C., Detroit, Flint, Michigan, Duluth, Minnesota.

The Master: May I ask what you mean by a single service container?

Mr. Gariepy: A single service container is a container that is used only for one service, and afterwards destroyed.

Q. Doctor, let me interrupt you while the Master made that inquiry.

Mr. Reporter, will you mark that Exhibit 13, please?

Mr. Rall: That is already marked.

Mr. Gariepy: All right.

Q. Plaintiff's Exhibit 3, which is already marked as of the date of April 27, 1939, what do you call that exhibit in your hand, Doctor, with regard to the subject matter of the inquiry as to single service containers, in use?

A. This is a collapsed blank of a single service
40 container for milk.

Q. That is before the filling?

A. This is before the filling, yes.

Q. Will you look at Plaintiff's Exhibit 2 of April 25, 1939, and tell the Master what that is?

A. This is a completed or finished container, ready to receive milk.

Mr. Schafer: Off the record, please.

(Discussion outside the record.)

Mr. Gariepy: Q. Doctor, do you want to qualify that answer with regard to whether it is ready to receive milk; or what do you mean by that?

A. Yes. This is a completely finished container.

Q. Without the milk?

A. Yes.

Q. In other words, the milk was not put in and the container was sealed as it is, with the milk not being poured in as it went through the machine?

A. Yes.

Q. Will you name other villages and cities that you started to name when I interrupted you there?

A. Detroit, Michigan, Dayton, Ohio. That represents those of which I have intimate knowledge.

Q. Do you know whether Toledo is using it?

A. Yes, Toledo is using it.

Q. Do you know anything about the suburban communities about Detroit and Philadelphia?

A. I am not well acquainted with the suburban areas around Detroit and Philadelphia, although I know the single service container is used to a certain extent in the suburban areas.

Q. How long has that use been going on, Doctor, that you know of, in these various cities that you have just mentioned?

A. Its use has been going on for a number of years. The exact date, perhaps, is not easy to determine. The single service container has been rather widely used for three years. Its original use was around 1906.

Q. What was that, Doctor, if you know?

A. The single service container was used at that time for special uses, as in the case of quarantined residences. It was available for a milk plant licensed to use it for such special purpose as milk products, buttermilk, for quarantined residences, where they had disease, but that was the only use the paper container had, until 1928, when the development started, including the use of the distribution of fresh milk and cream.

Q. Do you know the fact with regard to the regulation of the City of Reading, Pennsylvania, in the use of single service containers?

A. Yes.

Q. What is that regulation in the use of single service containers in that city?

Mr. Schaefer: I object to that.

The Master: What is the ground of the objection?

Mr. Schaefer: It is immaterial.

Mr. Gariepy: We have the ordinance here, Mr. Schaefer, if you want it, as bearing out the testimony. I have sent for a photostatic copy, certified by the City Clerk of the City of Reading, Pennsylvania, concerning that question, on this ordinance that I just mentioned, and I will have there here in the next few days.

The Master: What is the purpose of showing that ordinance?

Mr. Gariepy: The purpose of showing that is that that ordinance requires, in the case of quarantine, in that city,

in order to prevent the spread of disease, that single service containers, such as the subject matter of this inquiry, must be used.

The Master: Is that the only reason for introducing that ordinance?

Mr. Gariepy: That is right.

Mr. Schaefer: I will stipulate to that, that the ordinance of the City of Reading so provides.

43 The Master: All right.

Mr. Gariepy: Q. Do you know of other cities and villages, Doctor, that require, in cases of quarantine, that the single service paper milk container be used?

A. No.

Q. What do you know about the use of the single service container in Canada?

Mr. Schaefer: Where?

The Master: Canada, he said.

The Witness: A. There are about forty to fifty cities and towns in Canada now using the single service container for milk and milk products.

Mr. Gariepy: Q. Can you name them, Doctor?

A. Toronto, Hamilton, Sarnia, Peterborough, Guelph, are some of the prominent ones.

Q. From your experience and actual knowledge, how many cities and villages in the United States, would you say, are using single service paper milk containers today?

Mr. Schaefer: That is objected to.

The Master: I will let him answer.

The Witness: A. I estimate that about two hundred cities in the United States are using paper containers for milk.

Mr. Schaefer: I move to strike that, on the ground that the answer shows it is simply an estimate of the
44 witness.

The Master: I will let it go in, as long as his other testimony is in. It goes to the weight of it.

Mr. Gariepy: Q. Doctor, in your own research work in this field and in your contacts with the New York State Experimental Station, with Arthur D. Little and Company, with the International Paper Company, have you ever known or had any experience wherein disease has been shown to be caught or spread or contamination spread by reason of the use of the single service milk container?

Mr. Schaefer: That is objected to, on the ground that

what has come to this witness' attention does not tend at all to show the ultimate facts.

Mr. Garipey: No, but it shows his experience.

The Master: I will let him answer.

The Witness: A. No.

Mr. Garipey: Mr. Reporter, will you mark these photographs Exhibits 13 and 14.

(The photographs referred to were thereupon marked by the reporter Plaintiff's Exhibits 13 and 14, respectively, for identification.)

Mr. Garipey: Q. Doctor, in your research work
45 and study in this field on paper containers, and especially with regard to milk containers, will you tell us whether or not there is any such thing in the industry known as a standard milk bottle?

Mr. Schaefer: I object to that.

Mr. Garipey: What is the reason for the objection, Mr. Schaefer?

The Master: What is that?

Mr. Garipey: What is the reason for the objection?

Mr. Schaefer: The ground of the objection, if the Master please, is this: One of the ultimate questions to be decided by the court in this case is whether the language of the ordinance of the city of Chicago which is here assailed, which requires that milk and milk products be distributed in standard milk bottles, means glass milk bottles, as the city contends, or means paper containers, as the plaintiffs contend. The witness' opinion on the question, the ultimate question of how that ordinance should be construed, is immaterial, in the first place, and, in the second place, he is not qualified to answer that question. That is a question for you or the court to determine.

The Master: Can you qualify him as to his knowledge of milk bottles?

Mr. Garipey: Yes.

46 Mr. Schaefer: Yes, he can testify to that, and from that testimony you and the court may determine what is a standard milk bottle.

Mr. Garipey: Whether there is such a one, Mr. Schaefer.

The Master: You go ahead and find out what the witness knows about it.

Mr. Garipey: Will you read the question to the witness, Mr. Reporter?

(Mr. Garipey's last question was read by the reporter as above recorded.)

The Master: The objection to that will be sustained. Put another question.

Mr. Gariepy: Q. Doctor, have you ever run across or found in your experience and studies an article known as a standard milk bottle?

Mr. Schaefer: That is objected to.

The Master: Objection sustained.

Mr. Gariepy: What is the reason, Master?

The Master: That is a conclusion of the witness, in view of the issues here. You ask him what kind of bottles he has ever seen and we will judge whether they are standard or not.

Mr. Gariepy: All right.

Q. Will you look at Exhibit No. 13 for identification, 47 Doctor. Have you ever seen those bottles before?

A. Yes.

Q. Where did you see them and what are they?

A. They are known as glass bottles, for the packaging—

Mr. Schaefer: May we take a look at it?

Mr. Gariepy: Wait until he gets through with his answer.

The Witness: A. They are glass bottles for the packaging and distribution of milk, and they have been observed in cities and towns and in stores.

Mr. Gariepy: Q. Have you observed them yourself?

A. I have observed them, yes.

Q. Will you look at Exhibit No. 14 and tell me what that is?

A. This exhibit illustrates a number of glass containers for receiving milk and milk products, such as sour cream and fresh cream, as well as fresh milk.

Q. Is there any one of those shown in that exhibit in your hand now that is considered in the industry or has been found by you to be, from your experience and study, the standard milk bottle?

A. No.

Mr. Schaefer: Objected to.

The Master: Objection sustained and the answer 48 may be stricken. Maybe we can simplify this a little bit. Do you concede that the only bottles that are being used for the purpose of distributing milk are glass bottles and these paper containers?

Mr. Gariepy: No. I concede that besides the glass bottle and besides the bottles illustrated in Exhibits Nos.

13 and 14, that there are twenty-six some other paper bottles used in the sale and distribution of milk.

The Master: Let us put it this way. Off the record, please.

(Discussion had outside the record.)

The Master: Will you agree that in various communities where glass bottles have been used for milk, the bottles have varied in shape and possibly in the thickness of the glass, or it may be in the color of the glass, and that in other communities, where they have used these paper bottles, they may also have been using glass bottles, and that the paper bottles have differed one from the other in shape and color?

Mr. Gariepy: And style.

Mr. Schaefer: Yes, I will agree to that, but I will not agree—

The Master: They have to vary in size, depending on what size they are.

49 Mr. Gariepy: The pictures show.

Mr. Schaefer: I won't agree, however, that the milk bottle which has been used in the City of Chicago has been anything other than the shape and made of the material with which all of us are familiar.

Mr. Gariepy: That does not answer it.

Mr. Schaefer: Now, if you will read, Mr. Reporter, the first part of the Master's statement, that is what I am driving at. Perhaps I did not express it properly.

The Master: Let us put it down that in the City of Chicago, up to the time the endeavor has been made to use the paper container—

Mr. Schaefer: Up to the present time.

The Master: (Continuing) —the bottles in use have been made of glass.

Mr. Schaefer: Yes.

The Master: And have been of a uniform design. Is that right?

Mr. Schaefer: Yes, and shape.

Mr. Rall: No, we will not admit that they have been of uniform shape. In recent years the Milk Dealers Bottle Exchange has tried to get a certain degree of uniformity, but we can show a large number of variations from, for instance, the bottle that the large dairies use.

50 The Master: But they have been using in Chicago a glass bottle.

Mr. Rall: Right. No question about the first part of that.

The Master: Of course, the size of the bottle depends on how much you want to put in it.

Mr. Rall: But the shape—

The Master: Whether it be a quart bottle or a pint bottle.

Mr. Rall: But the shape is just as much a part of the definition of standard as the material out of which it is made. So we won't concede that the shape of the glass bottle used in Chicago has been uniform in style.

The Master: I will leave it open to you to introduce evidence.

Mr. Schaefer: On that point?

The Master: On that point, as to what the difference is in the shape of bottles that have been used in the City of Chicago. Maybe that will save some time.

Mr. Schaefer: Off the record, please.

(Further discussion off the record.)

Mr. Schaefer: We are agreeing as to the fact—Mr. Horan just called my attention to this—we are agreeing as to the fact, but we are not agreeing that the fact 51 is material.

The Master: You can argue later on as to what you mean by a standard bottle in your Chicago ordinance.

Mr. Gariepy: I might call the Master's attention to the fact that there is no provision in the ordinance, in any paragraph or in words, defining a standard bottle.

The Master: We will get to that.

Mr. Gariepy: But I want to call it to your attention, since we are talking about the standard bottle, and the admissibility of the evidence on that. The witness has identified Exhibits 13 and 14 as portraying bottles he has seen in his research and study, and in connection with the standard bottle, since we have not arrived at a stipulation concerning No. 2 or 4 or 6 or any other number as the standard bottle, I am offering that in evidence, that is, Exhibits 13 and 14, as illustrating that point.

Mr. Schaefer: I thought we stipulated as to that.

Mr. Gariepy: No, we have not arrived at a stipulation. You said if we can agree as to Bowman using No. 2 or 4 or whatever they are using, maybe we can get some place, otherwise, there is a hiatus on this.

The Master: These bottles which are shown on the

exhibits are not confined to the City of Chicago, are
52 they?

Mr. Gariepy: No. Throughout the country.

The Master: Used anywhere?

Mr. Gariepy: Throughout the country, in the sale and distribution of milk at retail.

Mr. Schaefer: If they are bottles at all.

Mr. Gariepy: You can call them that. You are quibbling over words. They are containers, and your ordinance uses the word "container" as well as the word "bottle."

The Master: Some of these appear to be merely ordinary drinking glasses.

Mr. Rall: But they serve milk in them. They have caps on them.

The Master: The question is what is meant by a bottle.

Mr. Gariepy: That is right.

Mr. Schaefer: The question is now—

The Master: He just wants to introduce these pictures as showing various containers which have been used for milk throughout the country.

Mr. Schaefer: In various municipalities?

The Master: Yes, and not confined to the City of Chicago. As a matter of fact, are there any City of Chicago
bottles shown in these pictures?

53 Mr. Rall: No.

Mr. Gariepy: Let me see. Just a minute, if the Master please. I think there is something here on that question that you raise by which we might be able to answer you.

The Master: Let the record show that Exhibits 13 and 14 are received in evidence as illustrations of milk containers in use in various parts of the country, other than in the City of Chicago.

Mr. Schaefer: Subject to our objection as to materiality.

The Master: Yes.

(Said photographs illustrating milk containers so offered and received in evidence were marked PLAIN-TIFF'S EXHIBITS 13 and 14, respectively, and are attached hereto and made a part hereof.)

Mr. Rall: The Master understands that there may be some bottles in use in the City of Chicago similar to these, but we are conceding that these pictures are not taken of the physical bottles used in the City of Chicago.

The Master: Yes.

Mr. Gariepy: Q. Doctor, with regard to the single service paper milk containers, are there various
54 shapes and sizes of those used throughout the cities and villages you have just mentioned?

A. Yes.

Mr. Gariepy: Mark that Exhibit No. 15, please, Mr. Reporter, for identification.

(The photograph referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 15 for identification.)

Mr. Gariepy: Q. I show you Plaintiff's Exhibit No. 15 for identification, Doctor, and ask you to tell the Master what that shows and what it is.

A. There are two photographs here. The top one shows the various types and sizes of paper containers that are used in the United States for the packaging and distribution of milk and milk products. Those containers are those that have been in fairly common use, not experimental types. The second or lower photograph illustrates a number of foreign types that have been secured at my laboratory, representing containers that are used in Germany, Denmark, England and Canada. Those, too, portray various shapes and sizes.

Mr. Gariepy: I offer in evidence Exhibit No. 15. Counsel is looking at a copy of the same exhibit.

55 Mr. Schaefer: We object to the introduction of Exhibit No. 15, on the ground it is irrelevant and immaterial.

The Master: I make the same ruling previously made. You can raise the point later on by motion to strike. It may be received.

(Said photograph of various paper containers so offered and received in evidence was marked PLAINTIFF'S EXHIBIT NO. 15, and is attached hereto and made a part hereof.)

Mr. Schaefer: It is clear, I take it, that the printed matter on the back of the exhibit is of no consequence.

Mr. Gariepy: It may be considered as deleted.

The Master: It will be deleted.

Mr. Gariepy: Q. Doctor, in your field of science and in your research work and experience is there a common accepted meaning of the word "sterility" as it applies to the single service paper container?

A. There is not a commonly accepted interpretation.

Q. In your tests and your research concerning the sterility of containers, what facts are considered and accepted in the trade with regard to the containers being sterile?

56 Mr. Schaefer: Will you read that question to me, Mr. Reporter?

(Mr. Gariepy's last question was read by the reporter as above recorded.)

Mr. Schaefer: I do not suppose I can object to that, if I do not understand the question. Maybe the witness can.

Mr. Gariepy: Q. Do you understand the question, Doctor?

A. Yes, I believe I do.

Q. Very well, will you answer it?

A. It is generally accepted in the trade that there is such a thing as essential or practical sterility.

Q. And when is that state arrived at?

A. That state is—

Mr. Schaefer: Now, if the Master please, I want to move to strike the preceding answer, which I could not anticipate, because I did not understand the question, and I want also to object to the pending question on the ground that the standard of sterility accepted in the trade, which I take it means the paper container manufacturing trade, is immaterial in this case.

Mr. Gariepy: No, this applies to milk, Mr. Schaefer. The question involves milk containers. We are not so concerned with the other container here, Doctor, and
57 my question to you relates to the sterility of milk containers.

The Master: Generally?

Mr. Gariepy: Generally.

The Master: Both glass and paper.

Mr. Schaefer: If there is any understanding in the trade as to the standard of sterility, it is entirely immaterial.

The Master: I was thinking as the witness was talking that there was a time in the stock yards when there was a standard, which was changed by the Food and Drug Act, and the standard accepted by the trade was not considered a standard which was acceptable to the government. Just how is what the trade thinks about sterility material to the issues here?

Mr. Gariepy: It is material, if the Master please, because of the fact that the commonly accepted or Webster's dictionary definition of sterility is not one that is in vogue and used every day in the matter of single service containers, that they arrive at a practical state as far as science and as far as human endeavor can put them, and when they arrive there that is the standard that they accept, and if this witness by reason of his experience and his knowledge in the field, is able to tell us what they
58 consider as sterility, he should be allowed to testify to that.

The Master: I will let you put the evidence in and we can argue later just what the word "sterile" means. Is the word "sterile" in the ordinance?

Mr. Schaefer: No, sir, but I still do not see what difference the trade standard of sterility makes. I do not see any purpose in wasting time on that.

The Master: I do not see it at this time, but I will let him answer.

The Witness: Would you care to have me enlarge further on that same subject, in view of the remarks that have been made by counsel?

The Master: Go ahead.

The Witness: A. When I mentioned the term of essential sterility and practical sterility, I had in mind a general condition that we find in industry generally, not only in this industry, but in other branches as well.

It is not common to encounter absolute sterility, and even if we expected it to be present or even if we considered it might be present, it would be very difficult to prove it. But in industrial activities and in industrial processes it has been found satisfactory to approach a condition of essential or practical sterility, as, for example, in the
59 manufacture of butyl alcohol. For the successful manufacture of butyl alcohol, which is a bacteriological process involving the use of micro-organisms, in order to obtain satisfactory results from an economic standpoint, contamination must be eliminated, and pains are taken to insure practical sterility. If in preparing their vats for the commercial production of butyl alcohol there should be a single organism or two, casual contamination, introduced, that would still not interfere with the practical results or the value of the work, so that casual contamination might get in and they would still have a condition

of essential or practical sterility. That has a connection that applies generally to the various industrial processes where micro-organisms are involved, and might also apply to medical processes.

Mr. Gariepy: Q. Are you acquainted with the regulations of the United States Public Health Service in regard to the sterility of paper milk bottles?

A. I am acquainted with—

Q. Under the standard milk ordinance of the United States Public Health Service?

A. I am acquainted with—

Mr. Schaefer: Is that two questions or one?

Mr. Gariepy: That is one question.

60 The Witness: A. I am acquainted with the standard methods that have been suggested by the American Public Health Association.

Mr. Gariepy: Q. What are they?

Mr. Schaefer: Just a moment. I move to strike that out.

The Master: Who is the American Public Health Association? Is that a government body?

The Witness: The American Public Health Association is an Association composed of workers in the various activities involving public health in the United States and Canada.

The Master: It is not a governmental body, is it?

The Witness: No, it is not.

The Master: Read the question put by Mr. Gariepy.

(Mr. Gariepy's question was read by the reporter as above recorded.)

The Master: There is an objection there, is there not?

Mr. Schaefer: And a motion to strike the answer as not responsive.

The Master: I will let him answer.

Mr. Schaefer: And there is an objection pending to the pending question, which is, as I take it now, what are the standards of the American Public Health Association.

61 It seems to me the question has been converted.

The Master: I will let him answer.

The Witness: A. The standard suggested by the Standard Methods Committee of the American Public Health Association states that a quart container for milk shall not contain more than a thousand organisms or a thousand colonies, and that the pint size shall not yield more than 500 colonies, and that the half-pint size not more than 250, or

stated in another way, as is sometimes done, particularly with the United States Public Health Service milk ordinance, one bacteria per cc. cubic capacity, or, in other words, 946 colonies per quart container.

The Master: Q. You say that is suggested by the committee?

A. That was the original suggestion of the committee, yes, of the Public Health Association.

Q. Has it ever been adopted by the Ublie Health Association?

A. That, I believe, is the commonly accepted standard. I do not know about what other processes they went through to make that generally applicable, but it is a suggested standard.

Q. It is a suggested standard by the committee?

A. It is one that is generally followed, as far as
62 I am acquainted, in conection with the United States Public Health milk ordinance.

Q. You mean, generally followed by whom?

A. Generally followed by towns and cities that wish to adopt that.

Mr. Gariepy: That wish to adopt the United States Public Health Service ordinance with regard to the matter of sterility and sanitation of paper bottles.

The Master: Q. You stated here that some committee made a suggestion. You have not stated that the association itself ever adopted the suggestion or transmitted it to anybody, and now you say that it is a standard which has been followed by such communities as wish to follow it. How many have followed it, if you know?

Mr. Schaefer: I move to strike out all of that as immaterial.

The Master: Well, the same objection has been made to the other testimony along this same line. I make the same ruling on that.

Q. How many have followed this, if you know?

A. It is impossible to state how many, without considerable detailed information.

Q. Do you know of any that have followed it?

A. The places that have followed that are in the middle-west and in the south. I believe to a certain extent the
63 City of Chicago follows the standard milk ordinance.

Q. I am talking about this question of sterility.

Mr. Gariepy: That is what he is referring to.

The Witness: Yes, that is what I am referring to.

Mr. Gariepy: Q. Do you know of any other standard or gauge concerning the number of colonies per quart bottle of milk?

A. Per glass bottle of milk?

Q. Per glass bottle of milk, yes.

A. No.

Q. That is, as used in the trade in the matter of testing for sterility and sanitation of paper bottles.

A. Of the paper bottle?

Q. Milk bottle.

A. Glass bottles, you mean?

Q. Yes, glass bottles of milk.

A. No.

The Master: Off the record, now, and let me see if I can get something here out of the way.

(Discussion had outside the record.)

The Master: Go ahead. I will let it stand.

Mr. Gariepy: Q. Doctor, have you made tests and performed research work with regard to the matter of the sterility of the Pure-Pak container shown before the Master as Plaintiff's Exhibit No. 2?

A. Yes, I have.

Q. Where is the foundation board for that Pure-Pak container made and out of what is it made?

A. The foundation board for that Pure-Pak container is made at the West Virginia mill of the Cherry River Paper Company.

Q. Have you visited that mill?

A. I have visited that mill three times.

Q. Are you acquainted with the operation of that mill in the matter of getting the raw material or the pulp or whatever the paper board is made of, up to the time the finished product is turned out?

A. Yes.

Q. Have you made tests and performed certain research experiments in the matter of the content of the bacteria in that paper board?

A. Yes.

Q. Will you tell the Master what the paper board is made out of, in the first instance?

A. The paper board is made out of prime spruce pulp. The logs are obtained in the vicinity of the mill, and they are cut, washed, chipped and placed in chemical digesters,

with a cooking acid. The chips are digested under high steam pressure, approaching 90 pounds for a period of six hours or more. This process removes the encrusting materials, such as lignum, and then the waste liquor, 65 the cooking liquor is washed out, and the pulp is washed.

The pulp is bleached in a bleaching solution of the strength of three and a half bleaching solution, a solution of calcium or bleaching powder. The pulp is bleached to whiteness, and then the water is pressed out of it, and the fibres are disintegrated in an apparatus called a fibre disintegrator. This disintegration is carried on in sterile water, which has been sterilized with chlorine.

The pulp is then sent to the paper machine and is further diluted with sterile water. The fibrous material then goes to a machine and the fibres are webbed or matted together. The water is drawn from the fibres. They mat together, are pressed together, bonded together firmly, and then they go over a long series of drier rolls, steam-heated cylinders, which at the surface of the cylinders obtains a temperature of about 360 degrees Fahrenheit. The surface of the board is in contact with the heated cylinder, and the surface of the board reaches temperatures between 175 degrees Fahrenheit to 200 degrees Fahrenheit.

This drying apparatus or procedure is an evaporating process. The water is evaporated and the moisture content of the paper board is reduced to a normal uniform, 66 conservative amount.

The paper board coming off of the machine receives an ironing-out process to give it a gloss, in a similar way as the housewife sprinkles clothes and irons them, in order to give the paper board a surface gloss. This sprinkling that the paper gets is done with chlorinated water, which is sterile.

The glossy paper comes off of so-called calendars or ironers, and then is either rolled or cut into flat sheets. This is done mechanically.

The board is wrapped in clean paper and sealed. It is then transported to a freight car which has been cleaned and lined with paper. From this point the paper board is shipped to the converting plant.

Q: Do you know the converting plant for the paper container shown to you as Plaintiff's Exhibit 2, I think it is?

A. I am acquainted with the converting plant, yes.

Q. And where is the converting plant?

A. That converting plant is at Middletown, Ohio.

Q. And the name of the plant?

A. The Gardner-Richardson Company.

Q. Will you tell the Master the various means employed at the Cherry River Paper Company for the purpose of preventing contamination of the board during the
67 process other than those you have just enumerated now, from the time the pulp is brought into the mill and taken out as stiff board? What about the employees, what did you observe about them, as concerning their hands and their actions regarding this product, the raw and the finished product?

A. The employees observe sanitary precautions in the way of clean hands and sanitary behavior. There is mechanical handling of the stock, of the pulp and the stock, and all of the necessary precautions to prevent contamination from extraneous sources are taken.

Q. What are those precautions that you observed?

A. The paper board is not allowed to come in contact with the floor. The paper board is not handled carelessly, it does not come, in fact, into manual contact, other than may be necessary for adequate inspection.

Q. And in regard to this matter of sanitation, the use of the hands by employees, what is your experience with regard to the use of gloves or the use of hands in the handling of this paper board?

A. My experience has been that adequate facilities should be provided for the cleanliness of the hands, and nearby employees should be encouraged to use these facilities.

68 Q. Do you know what facilities exist at the Cherry River Mill for the washing of the hands on the part of any employees who come in touch with or handle this board?

A. Yes.

Q. What are they?

A. There are numerous facilities contiguous to or close to the various operations.

Q. Would you suggest the use of any gloves or any other article for the hands?

A. No, I would not make any such suggestion.

Q. Why?

A. I do not favor the use of gloves. I do not consider that necessary. I do not think that the gloves are sanitary, because soon after they have been used they become dirty, and then they are just an additional hazard.

Q. How many tests have you made upon the finished product, the paper board, as it comes out of the mill and is ready for shipment to the Gardner-Richardson Company, in behalf of the consuming public, for whom you said you were working in carrying on these tests and research?

A. I have made approximately three hundred and fifty tests.

69 Q. And when did you make the last test on this paper board here in question?

A. That test has been made within the last few weeks.

Q. Where was the test made, Doctor?

A. The tests of the boards are made in my laboratory at Geneva.

Q. What did the tests of the board reveal per cubic centimeter with regard to bacteria count?

A. The tests that I have made since January 1st up to date indicate or show that the paper board now being received by me, representing shipments that are being collected under bacteriological control and shipped to the converters, are essentially sterile.

Q. Doctor, in my question to you I said per cubic centimeter. I meant per gram, in regard to the paper board. What was the count that you found, Doctor, to support that conclusion that the board was essentially sterile, that is, the count you found per gram in regard to bacteria content?

A. I might say just before answering that that of these two hundred and forty tests that I have made over a period of two years and which I have tabulated carefully, 88 per cent of these tests give results of less than 100 colonies per gram of disintegrated paper board.

70 To explain somewhat about the significance of these 100 per gram, following preliminary investigations and early investigations on this subject the results indicated that 500 colonies per gram—

Mr. Schaefer: Just a moment. If the Master please, this is a long voluntary statement. There is a question pending.

The Master: I will let him complete it.

Mr. Gariepy: I withdraw that question, so he can answer.

The Master: Let him continue to go ahead.

The Witness: A. (Continuing.) The suggestion was made, as a result of research work, that 500 colonies per gram would be a reasonable and safe maximum, that milk container board should meet a standard of less than 500 colonies per gram. The people making this product have had no difficulty in meeting this standard. So that explains the significance of the fact that 88 per cent of the tests made on the 240 samples that have been calculated from June, 1937, to the present show counts of less than 100 per gram.

The Master: Let me ask a question right there.

Q. That is when the board is finished, is it?

A. That is when the board is finished, yes.

Q. How does that compare with the amount of 71 colonies present in a glass bottle, when it is just finished?

A. From my experience with the glass bottle, the counts are extremely variable. By extremely variable, I mean it jumps around a good deal. If I rinse a hundred or two hundred glass bottles, my counts will not be uniform, in my experience. This is considerable fluctuation in the results. In my experience, they vary from a few hundred to several hundred thousand per container.

Q. That is not the question I asked. What I want to get is the ultimate fact. This board is organic matter, is it not?

A. Yes.

Q. Would you consider glass as an organic material?

A. No.

Q. The materials composing the glass have been subjected to intense heat, have they not?

A. Yes.

Q. When the glass is finally completed—

A. I see what you mean.

Q. (Continuing.) —is there as much bacteria on the glass as there is on one of these paper boards?

A. I beg your pardon. I did not understand your question. You mean, as the glass is manufactured?

72 Q. Yes. I am trying to compare the amount of bacteria that is present at the same stage of manufacture of the board and of the glass.

A. Glass is manufactured at about 2500 degrees, a terrific heat, and, naturally, when that cools down that glass is sterile, as we understand sterility or can measure it in our bacteriological tests.

Q. Then you would say at the same point when the glass is just finished and the board is just finished, that the board contains more bacteria than the glass?

A. The board has, roughly, that count, but it is essentially sterile, while the glass after being manufactured is absolutely sterile, as we can measure it.

Mr. Gariepy: Q. Doctor, in regard to after the glass milk bottle has been sterilized or washed in the regular washing process, have you made any research into the colony count on that bottle then?

Mr. Schaefer: That is objected to. It does not show any count on the container.

Mr. Gariepy: You are contending the glass bottle is sterilized, and the glass bottle, as sold to the people of Chicago, is a better receptacle than the paper bottle.

The Master: He has already testified to that.

Mr. Gariepy: No, he has not on the sterilized bottle.

The Master: That the glass bottles do contain some
73 organisms in them after cleaning them.

The Witness: That testimony I just gave.

Mr. Gariepy: A sterilized glass bottle?

The Witness: A glass bottle at the time it is filled with milk.

Mr. Gariepy: He did give it?

Mr. Rall: We are talking about containers. He was talking about milk before.

The Master: I am asking him to give it again.

Mr. Rall: After the glass bottle has been used, not when it has come from this great heat.

The Master: Let us not have so many people asking so many questions. I will ask the question.

Q. After a bottle has been completed and after it has gone into use and milk has been put into it and the bottle has come back to the dairy and cleaned with such methods as are available, let us say the best method that is available for cleaning and sterilizing the bottle, are there any microbes or organisms or bacteria in the bottle?

Mr. Schaefer: That is objected to.

The Master: That is his question too.

Mr. Gariepy: That is my question.

The Master: I am reframing it for him.

Mr. Schaefer: That is objected to for this reason:

74 What the sterility of the glass bottles was after they were washed in the method that the bottles used by Dr. Sanborn were washed does not make any difference here. The question we are concerned with here, if we are concerned with it at all, is what sort of enforcement do we get of the ordinance of the City of Chicago which requires the washing and sterilizing of bottles. The condition of glass bottles will not be the same in any municipality in the country. It will vary from one to the other.

The Master: I did not ask him that. I asked him about the sterilization of the bottle with the best method available for sterilizing the bottle. I asked him the best one he knew of.

Mr. Schaefer: Mr. Reporter, will you read me the Master's question?

(The record was read by the reporter as above recorded.)

Mr. Schaefer: Why not ask him first if he knows?

Mr. Gariepy: Q. Doctor, you know, don't you?

A. Yes.

Mr. Gariepy: Mr. Schaefer wants to know if he knows.

The Master: Go ahead and answer.

The Witness: A. Yes.

Mr. Gariepy: Q. Then tell what you found, Doctor,
75 on making the test of the bacteria content of that bottle which has gone through the process that the Master has described in his question to you.

The Master: With the best method of sterilization available.

The Witness: A. With the best method of sterilization available it is possible to obtain, according to bacteriological tests, a sterile glass bottle. Some of them are essentially sterile. On the other hand, as I mentioned before, the counts fluctuate considerably and you may find several hundred per bottle or several thousand per bottle. Under the best method of sterilization, the best method of washing and sterilization, it is infrequent to find very high counts.

Mr. Gariepy: Q. And how does that count compare with the findings that you had or made on the paper container?

A. The paper container, talking generally now, if you

wish, shows the absence of bacteria in sterility tests, with broth,—

The Master: Q. With what?

A. Broth, bouillon.

Q. Yes.

A. (Continuing.) —in approximately thirty-five to sixty per cent of the cases. In about ninety per cent of the cases the counts are less than five per container, 76 which I consider practical sterility.

Q. Is that less than on a glass bottle?

A. As counsel said, the counts vary so from municipality to municipality, and they have had so many different experiences and the processes vary so that it would be very difficult to strike an average.

Mr. Gariepy: Q. What has been your experience as compared to the counts in the glass bottle?

Mr. Schaefer: Let the witness state.

The Master: Let him answer.

Mr. Gariepy: Q. What is your experience, is what the Master wants to know, from experiments you have run, as to the counts in the paper bottle as compared with the glass bottle?

A. My experience is that there is a higher degree of sterility in the paper bottle than in the glass bottle.

The Master: Q. Would you make that answer if the bottle were sterilized by the best method of sterilization in use in dairies working at almost top efficiency?

A. Well, that would be very difficult to answer, Master, for the reason that I would like to know the plant and have an investigation of it. It is quite probable that that may be true, but as far as my experience goes I still 77 think that the paper container for milk will contain fewer organisms than the best commercial practices for glass. The glass bottle can be washed best at home.

Q. The glass bottle?

A. If you take pains, as the good housewife does, it is very often sterile, particularly when she scours it out. In my experience, commercial practices are not comparable in efficiency with home practice.

Q. When you use broth in experiments with these bottles, is that hot broth?

A. No. The broth is bouillon. It is meat extract.

Q. It is not hot?

A. It is not hot. It is a liquid which grows a great

many of the common organisms, the majority of organisms that we know about in bacteriology, and that broth is sterilized and is introduced in a sterile condition into the paper container. The paper container is rinsed in such a manner as to wash down as well as possible all inside surfaces. After being rinsed, the container is incubated with the broth in it for a sufficient length of time to grow whatever organisms may be present. At the end of that incubation period the container is opened and examined for the presence of organisms that were there originally and grew, and from the results obtained the sterility of the container is calculated.

78 Mr. Gariepy: Q. Have you performed those tests containing the count in the paper container, with the broth test?

A. Yes.

Q. And were those performed a few months ago, that is, since January, 1939, with the broth test?

A. Yes.

Q. Doctor, is there anybody paying you for testifying here today?

A. No.

Q. Have you any interest in the outcome of this lawsuit, financial or otherwise?

A. No.

Q. Have you made tests with regard to the paper used on the glass milk bottle, with regard to the bacteria content in the cap?

A. Yes.

Q. When did you perform such tests and do such research work on caps?

A. During 1938 and 1939.

Q. With special reference to caps, did you also test the hooded caps, the inside of the hooded cap?

A. The material of the hooded cap, yes.

Q. The material of the hooded cap?

A. Yes.

Q. Will you tell the Master what your findings were for the research work on the inserted cap, the one that goes down into the lip of the bottle, as well as on the hooded cap, taking one at a time, and stating what you found concerning bacteria in that paper.

A. The material of which the cap is composed is much the same, being prime stock, as the material going into a

paper container. The material of which paper caps and hoods are made is prime pulp of the types used in the manufacture of paper containers for milk and milk products. These cap boards and hood boards have comparable bacteria counts to those found in the paper container stock.

Q. Is there anything in the hooded cap that you found in your experience and in your tests that gives it more virtue than the inserted cap that goes down, that you pull up with a little tab?

A. Might I ask what you mean by virtue?

Q. Any more merit to the article, as far as bacteria or sanitation is concerned.

A. Bacteria content?

Q. Yes.

A. The bacteria content of the hood or of the plug cap may not vary at all in quality as far as bacteriological count is concerned.

Q. Now, Doctor, with regard to Exhibit 2, the Pure-Pak container in question before you, do you know whether
80 any secondary stock or reissued stock is used by the Cherry River Paper Company in turning out that product?

A. There is no secondary material used.

Q. Will you explain to the Master what secondary material is?

A. In general, Master, we have three types of material. We have the so-called prime pulps.

Q. Which are used on what?

A. Which are used in the manufacture of paper containers for milk and which are used in the manufacture of ice cream containers of the pint and quart sizes, of bottle caps and food trays and cheese boxes. Then we have a second class of high grade materials, which are not necessarily prime, usually not prime pulp, but nevertheless high grade pulp, which may be used in the manufacture of dried food containers, such as breakfast food cartons. Then we have a third class, called the waste paper class, of material collected from unknown origin, used in the manufacture of shoe boxes and that type of box.

Q. Doctor, do you act in an advisory capacity with regard to paper containers and paper stock used in the sale of food products and milk products for various municipalities throughout the country?

A. Public health men do ask my advice regarding
81 these products.

Q. And are you giving that at the present time?

A. Yes.

Q. Have you checked up to know whether they are accepting your advice concerning the quality of these containers, with regard to the sterility, bacterial content, and so on?

A. Yes, I have.

Q. With regard to the disintegration of the paper board, Doctor, in performing your tests, will you explain to the Master how that distintegration takes place?

A. Paper board is handled aseptically, that would be without any handling. It is received under instructions from the mill, properly packaged in sterile moisture proof wrapping. The wrapper is removed and handled in the preparatory work with sterile instruments, that is, sterile instruments such as shears. The paper board is cut into sections and delivered into sterile dishes. There are various types of disintegration apparatuses that we now have for breaking up or pulping or disintegrating this paper board. There has been one sent over here.

Q. Is this the one you used in performing your tests?

A. This is one of the types that I am using.

82 The Master: Possibly it would be a good idea to have a short recess here.

(A short recess was here had, after which the proceedings were resumed as follows:)

The Master: You may proceed.

Mr. Gariepy: Q. Doctor, on resuming, will you explain to the Master this distintegration process that is done by this machine that is before you?

A. I carried the description as far as cutting with sterile instruments the paper into sections into the sterile dish, which is a covered sterile dish. This is the container in which this distintegration is performed. This is one type of several.

The Master: Q. What are you trying to distintegrate now?

A. I am trying to disintegrate a portion of this blank.

Q. Of what?

A. Of this paper, in order to determine the bacteriological content.

Q. All right, go ahead.

A. This is one of several devices that may be used. There are four or five that are used successfully now and that give comparable results. I place in this container a certain amount of water, 300 centimeters of water, and I cover it this way, and sterilize under approved conditions, and by approved methods, by an Autoclave. At the
83 conclusion of the sterilization the container is cooled and the cut pieces of paper board used in the manufacture of the paper container for milk are introduced into that water.

The Master: Off the record, please.

(Discussion off the record.)

Mr. Gariepy: Mr. Schaefer, since the doctor has explained in his writings, what about the introduction of one of the writings in here, so the record has it, without going through it physically and orally here?

The Witness: That illustrates another type of disintegrator. I have used two types.

Mr. Schaefer: Let me see it.

Mr. Gariepy: I might say that this matter involves, in addition, the tests which the city asks to be made requiring the use of a substance known as safranin. The question was whether the disintegration test by using the machine that the doctor has it to be gone into fully, that is, the disintegration of the board. The doctor now is attempting to describe his method. Whether with the use of safranin or not, the purpose of both of them is to show how much absorption there is in the paper and what is in the material.

The Master: His present testimony is merely descriptive of the method adopted in order to get at the
84 bacteria content of a piece of this board?

Mr. Gariepy: That is right.

The Master: Now, then, I am asking Mr. Schaefer whether he cares to have the details of the analysis spread upon the record, or whether he is satisfied with merely the statement that the method adopted was one whereby it would be determined accurately, according to the best science available, the bacteria content, and that according to that method certain results were arrived at by a competent analyst. Are you satisfied with that, Mr. Schaefer?

Mr. Schaefer: I am satisfied with what the Master has stated. I don't know about this.

The Master: All right, now, are you satisfied to have that statement in the record?

Mr. Gariepy: That is right.

The Master: Q. Now, then, can you give the results of your analysis by the method you have used? What do you call this method?

A. Disintegration method.

Q. All right.

A. I have given the results of this disintegration method in my previous testimony where I gave the count per gram per board. We proceed from this point with bacteriological plates, in accordance with approved or standard bacteriological technique, and enumerate and count the number of organisms per gram of paper board or calculate the number of organisms per gram of paper board, based on the development of the colonies obtained from this pulp.

Mr. Gariepy: Q. Have you given that count, Doctor?

A. Yes, I have given the count.

Q. Doctor, after the paper board is sent to the Gardner-Richardson people and from there shipped to the milk dealer or dairy, ready for use in the machine and inserted in the machine, it receives a certain paraffin bath, does it?

A. Yes.

Q. And what kind of paraffin, do you know, is used on the Pure-Pak container in question here?

A. Fully refined paraffin is used.

Q. And what are the constituents of it?

A. Fully refined paraffin is the purest form of paraffin with which science is familiar. It is the last stage in the process of refinement, and it is inert and provides an effective way of moisture-proofing the paper container.

Q. What other object does it have or what other purpose does it serve, other than moisture-proofing the container?

A. Moisture-proofing is the primary purpose of the paraffin. That is in my opinion. In addition to that, the paraffining may act as an additional sanitary safeguard, in that certain bacteria which may be present might be killed by the temperature of the melted paraffin.

Q. What is that temperature?

A. The temperatures used in the paraffin baths vary from 165 to 180, but in the present reference, in the present case, the temperature is approximately 172 to 176 degrees Fahrenheit.

Q. Are you acquainted with the Ex-Cell-O machine used in paraffining and filling the container, Exhibit 2 here?

A. Yes.

Q. Have you seen it in operation?

A. Yes.

Mr. Schaefer: Just one minute. You said in the present case the temperature is 172 to 176. What did you mean by that?

The Witness: Referring to the paraffining of this particular container, this particular type of container. The general range I gave applies to paper containers generally, for milk.

Mr. Gariepy: Q. It refers to the heat or the temperature of the paraffin bath?

A. Of the paraffin bath.

Q. Of the Ex-Cell-O machine?

A. Yes.

87 Q. Will you explain to the Master the precautions that are taken in the assembling of this Ex-Cell-O machine that fills the paper container, Exhibit 2, and paraffins it and seals it, with regard to the quality of material used and the number of hands employed in this process?

A. If I might just give one further statement. I have not finished my testimony.

Q. All right. I withdraw the last question.

A. I have not finished my testimony concerning the function or possible function of paraffining. I mentioned that in my opinion the primary function was to moisture-proof the container. It may also have another function, in that the temperature may be sufficient to kill certain bacteria. In another case it is possible that any organisms within the layer of paper board might be sealed in by this process of paraffining.

Q. What other food containers are used daily in the city of Chicago, that you know of, that contain a paraffin coating for the purpose of water-proofing or sealing in?

Mr. Schaefer: That is objected to as immaterial.

The Master: I will let him answer.

The Witness: A. Cheese boxes and paper straws and paper cups, butter boxes and kindred types of containers as commonly used in all cities and states are univers-
88 ally employed for the packaging of food.

Mr. Gariepy: Q. What about cream cheese that you may purchase?

A. Cottage cheese, cream cheese. I mentioned cheese containers. That includes cottage cheese mainly.

Mr. Gariepy: Mr. Reporter, will you mark this Exhibit 15-A for identification?

(The photograph referred to was thereupon marked Plaintiff's Exhibit 15-A for identification.)

The Master: Q. Does paraffin disintegrate or melt in very hot weather?

A. Paraffin may soften at high temperatures, such as we have on a day like this. It may become soft.

Mr. Gariepy: Q. Is there anything in the paraffin, Doctor, that is detrimental or would deteriorate or destroy the properties of Grade A milk put into a container.

A. No.

Q. By reason of the fact that it disintegrates a little with heat?

A. No.

Q. Is there anything in that paraffin?

A. No.

The Master: Q. Would it change the taste of the milk any?

89 A. In my opinion and experience, no.

Q. Would it cause an odor to get into the milk?

A. No.

Mr. Gariepy: Q. Is there any odor to this paraffin Doctor?

A. No.

Q. Do you know where this paraffin is mined or quarried, so to speak, and sent to the Ex-Cell-O machines as used by the plaintiff in this case?

A. No.

Q. You don't know where it comes from?

A. I do not know where its origin is.

Q. Do you know how it is shipped?

A. Yes, I know how it is shipped.

Q. Will you describe to the Master what precautions, as far as you know, are taken in the shipment of that?

A. Paraffin is shipped in slabs, contained in burlap bags, which are lined with muslin or some clean material, and shipped directly to the plant where it is to be used.

Q. Doctor, I show you Plaintiff's Exhibit 15-A for identification. Will you tell the Master what that is?

A. This is a picture of the Ex-Cell-O machine for forming and paraffining and filling the Pure-Pak container, the one before us.

Q. Were you present when the picture of that machine was taken there?
90

A. Yes, I was present.

Q. And how many men are used or employed in the matter of processing or filling in the blanks and turning out the finished bottle of milk here, as shown in Exhibit 2?

A. Two men were used.

Q. And what manual processes are employed from the time the blank is inserted in the machine until the time it comes out sealed and filled with milk?

A. A manual process is involved when the blanks are transferred to the machine. After that there is no manual contact until after the container is filled, sealed and stapled.

Q. And ready for delivery, packaged?

A. Yes, and ready for delivery.

Q. With regard to the cap, which contains a wire going through the top, what measures are employed to prevent contamination or disease with regard to the use of that wire?

A. The wire is heated at a very high temperature at the time it is inserted.

Q. And what temperature is that, if you know?

The Master: Very high.

Mr. Gariepy: Q. Does it sterilize the wire?

A. Yes. It is heated very hot. I do know the temperature, but at the moment it escapes me.

91 Mr. Gariepy: Did you look at that Exhibit 15-A, Mr. Schaefer?

Counsel suggests that I give him a photograph of Exhibit No. 15-A without the reading. I will bring it in and show it to him and have it approved. Any objection?

Mr. Schaefer: And substitute it?

Mr. Gariepy: And substitute it for Exhibit No. 15-A here.

Mr. Schaefer: No objection.

The Master: Then Exhibit No. 15-A may be considered in evidence.

(The photograph of the Ex-Cell-O machine so offered and received in evidence was marked PLAINTIFF'S EXHIBIT 15-A and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. Doctor, what precautions are taken by the employees in the feeding or the operation of this machine, Exhibit No. 15-A here, to prevent contamination?

A. The ordinary sanitary precautions are taken in the way of personal cleanliness and precautions are taken to see to it that extraordinary or unnecessary manual con-

tact is avoided, and if such should be the case such contact is eliminated by removing such blanks as are 91-A involved and discarding them. The facilities are provided for dismantling certain portions of this equipment for the purpose of cleaning. In certain cases direct sterilization of parts of the equipment is undertaken in the way of treating with alcohol and flaming, to insure that every step in the process will be such as will prevent the addition of micro-organisms to the container.

Q. What is done with the machine in regard to sterilization after each use, if you know?

A. I don't know.

Mr. Schaefer: I object to that.

Mr. Gariépy: Well, he doesn't know.

Master, may we suspend here with the witness?

The Master: Yes.

Mr. Gariépy: Shall we resume at 1:30 or 2:00 o'clock?

The Master: Make it 2:00 o'clock.

The Witness: Thank you very much, sir.

(Whereupon, at 12:35 p. m., a recess was taken to 2:00 o'clock p. m. of the same day, Wednesday, May 31, 1939.)

Hearing resumed before Master Grossman at 2 o'clock P. M. on May 31, 1939.

The same counsel present.

DR. JOSEPH RAYMOND SANBORN resumed the witness stand, and testified further as follows:

Direct Examination (Continued).

Mr. Gariépy: With regard to Exhibit 15 which was received in evidence, we have here an actual photograph of Exhibit 15 in two parts as well as an advertising photograph of the various sections of Exhibit No. 15, and the advertising section we will consider deleted. For your information, counsel for the City has agreed to accept this exhibit. Is that right?

Mr. Schaefer: Correct.

Mr. Gariépy: The former Exhibit 15 will be withdrawn and Plaintiff's Exhibit 15-A substituted in lieu thereof.

Master Grossman: Proceed.

Mr. Gariepy: Q. Dr. Sanborn, where micro organisms have been found in paper containers for milk in your
93 research work and your examinations, have you conducted studies of these types for the purpose of identification?

A. Yes.

Q. What have you found?

A. Where organisms have appeared, we have isolated them and made identification.

Q. What identification did you make concerning those organisms, those micro organisms?

A. Stereoptic studies in which harmless, non-spoor bearing bacteria are found, a few other types that are associated with nature and are harmless contaminants of spoors; these include a few mold spoors.

Q. Would you explain to the Master what you mean by these spoors?

A. In the case of a mold spoor, the spoor is a means of reproduction. The spoor is a seed.

Q. Have you investigated the various culture mentioned in order to bring out the various groups of micro organisms that will be present?

A. Yes. We have selected a number of different media in order to bring out the different types, the different groups of organisms that might be present; we have used in this connection both the new standard agar, the potato agar and other agar which brings out a few more mold features, fungus features. We have used the yeast extract agar and the nutrient broth which was mentioned
94 this morning.

Q. What do you mean in common every-day language by pathogenic bacteria as it applies to this, with regard to the single service paper container or the paper board here?

A. There is no problem of disease or pathogenic bacteria in paper manufacture.

Q. Are there any bacteria at all found in the paper board pathogenic bacteria?

Mr. Schaefer: Just a moment, please. I would like to have that last answer stricken as not responsive to the question.

Mr. Gariepy: Doctor, I will reframe that question.

Master Grossman: That may be stricken.

Mr. Gariepy: Q. Describe to the Master in common every-day language so that we all understand what pathogenic bacteria is, as found in your research work in paper boards or in any other type of paper containers.

A. Pathogenic bacteria of course are disease-producing bacteria and it is capable of causing disease in animals, human beings or plants, according to the definition of pathogenicity. I have knowledge that bacteriologists usually have of pathogenic bacteria and from that knowledge, in paper process manufacturing, there is not 95 any problem of disease or disease-producing bacteria in paper manufacture.

Mr. Schaefer: I move to strike the last portion of the answer as voluntary, as there is no such question.

Mr. Gariepy: Master, I suggest that it all be stricken and let me reframe the question and the Doctor can answer responsively.

Master Grossman: Strike it all out.

Mr. Gariepy: Q. Doctor, what is pathogenic bacteria?

A. Pathogenic bacteria are bacteria fungi having the property of causing disease.

Q. Have you in your research work and examination in the paper board that you testified about this morning, found in the container, Exhibit 2, any pathogenic bacteria?

A. No.

Q. You talked about paper board this morning, Doctor.

A. Yes.

Mr. Gariepy: I ask that this be marked Plaintiff's Exhibit 16 for identification.

Master Grossman: It may be so marked.

(A large roll of paper referred to was thereupon marked by the Reporter "Plaintiff's Exhibit No. 16 for identification".)

Mr. Gariepy: Q. I show you a roll of paper with 96 the first sheet marked Plaintiff's Exhibit 16 for identification, and ask you if you know what that is.

A. That is paper board manufactured for the fabrication of single service type containers for milk.

Q. Do you know where that paper board was made? Can you identify it by looking at it?

A. Yes.

Q. Where?

A. At the Cherry River Paper Company plant.

Q. State what you had in mind in the testimony which you gave about disintegration tests and so forth.

A. That is the type of board.

Master Grossman: Q. That is the same paper that is found in these other exhibits which have been made up into containers?

Mr. Gariepy: Exhibits 2 and 3, that is the same paper board.

Master Grossman: Did you introduce that?

The Witness: That is to show how it goes in the roll, and the printing.

Master Grossman: You can describe it in the record, can you?

Mr. Gariepy: If you have got it sufficiently, then it's all right with me.

Master Grossman: What is the printing on it?

97 Mr. Gariepy: The printing with regard to the dealer and so on.

Master Grossman: Go ahead. I am trying to keep this record within bounds and not have a great big unwieldly record. All you have is a certain piece of paper board or a certain texture.

(Discussion off the record.)

Mr. Gariepy: Let the record show it is agreed by counsel for plaintiff and counsel for the defendants that the paper board the Doctor has testified to this morning comes in sheets approximately 50 inches by 40 inches; on one side of which is printed the name of the dealer and on the reverse side is blank; the reverse side being the inside of the paper container, the finished product.

Q. Is that right, Doctor?

A. Yes, sir.

Q. Doctor, does this paper board which we have just discussed here and which has been stipulated concerning description, contain sufficient moisture after it leaves the Cherry River Paper Company for pathogenic bacteria to live on?

A. No, or any other type of bacteria. The content is not sufficient to support the life of an organism.

Q. You referred to the amount of water that is con-
98 tained in there.

A. That is right.

Q. Why is water an element necessary concerning the life of bacteria?

A. Water plays a vital part in the growth, and multiplication of all forms of life.

Q. Have you in your research work and examination made tests concerning the amount of bacteria contained in a quart bottle of grade A pasteurized milk, in the milk test?

Master Grossman: Read that question back.

(Question read.)

Mr. Gariepy: Q. Not the bottle, just the quart of milk:

A. Yes.

Q. What has been your finding?

A. The count varies. It may be several hundred.

Q. Are those pathogenic or not?

A. No, they are not.

Q. Suppose that you were to allow this paper board that has been identified to stand under normal conditions of use anywhere in a factory and without being immediately converted into the finished container, put into the machine; what would be the result of bacteria living or increasing in that paper board?

99 Mr. Schaefer: I object to that. All of the conditions have not been described.

Mr. Gariepy: All right, let's take the conditions:

Q. The conditions in a factory, temperature 70 degrees for working conditions where paper board is stored in the factory or warehouse.

A. Protected?

Q. Yes, protected and covered over with such paper or other substance as they see fit to bring out?

A. Properly protected and properly stored, we have indications that the bacterial count in paper board decreases on storage.

Q. How long a period of time would be necessary to you to find such degree in that board?

A. I have noted decreases after two weeks, three weeks to a month.

Q. Do you know whether there are certain kinds of milk in use today prescribed by physicians that are inoculated with bacteria?

A. Yes, I do.

Mr. Schaefer: That is objected to as immaterial.

Master Grossman: Overruled.

Mr. Gariepy: Q. What kind of milk is that?

A. You have the so-called fermented milk, Bulgarias

or Acidolphus and fermentation has been used therapeutically.

100 Q. What is the force of this bacteria that is inoculated into such milk?

A. The force?

Q. Yes, is it harmful or not?

A. No, of course that opens up a big field for discussion, but I think what you want there is this: For a long time it was considered that the formulas even desired organisms that developed in milk and are allowed to ferment milk, such as would be desirable in the human intestines; whereas in some cases intestinal troubles are accompanied by situations where it is coped with by taking certain of these in to ferment the milk and you supplement the bacteria, replace them with desirable type.

Q. In your testimony you described the process of the milling of paper board, the chlorine being used.

A. Yes.

Q. What is the effect of this chlorine that is used in the paper board?

A. The effect of it is a bacteriacide.

Q. What is the purpose?

A. The purpose is two-fold. It first provides a sterile water. The water is such an important part in the making of pulp and paper that it is necessary to use a
101 water that does not contain bacteria. Also by introducing chlorine, maintaining a certain chlorine residuent you can use that as a bacteriacide or bacteria killing solution and if there are any places that may be foci developed or bacteria having a certain amount or proportion, it is chlorinated again and it acts as a germicide.

Q. From your experience and research work, Doctor, is the single service container in the blank there, I think that is Exhibit 3, would you say that is essentially sterile without the paraffin?

A. Properly packaged that is essentially sterile.

Master Grossman: Q. Paraffin is put on there before the sheet goes out of the paper mill, is it?

A. No. The last thing just before it is filled with milk, this is formed like that, mechanically.

Q. You mean the box is first formed and then is dipped into paraffin?

A. Yes, and it is drained and it passes along and is filled with milk and is sealed or the staple is put in, the last thing.

Mr. Garipey: Q. Will you explain to the Master on Exhibit 15, or show the manner of filling the container as each one of these are filled in the machine?

A. First there is the opening out of the container 102 and the forming of the container and the application of the adhesive in order to seal it.

Master Grossman: Q. Application of adhesive?

A. Yes.

Q. What kind of adhesive?

A. They have got to have adhesive, they use starch adhesive and sometimes tapioca starch or casein or a germ plastic synthetic adhesive, they are the general ones that are used. Then it is dipped in paraffin, it is immersed in paraffin and then drained, as is shown.

Mr. Garipey: Talk louder, Doctor, please.

A. There is the paraffin dipping where you can see it drip and drains and then there is carried this chamber where the container is cooled and, there is the filling I spoke of where they pass it on and it is filled with milk. Then the stapling is right along there and it passes out here and it is picked up in rows.

Q. The fourth section is the finished product with the paraffin, the cooling, the filling and the sealing at the top?

A. Yes, sir.

Q. What temperature is that cooling process put at, as it goes through the cooling chamber shown in section 2?

A. I don't recall the exact temperature of the 103 cooling chamber.

Q. Doctor, you talked about some tests this morning. Do you know such a thing in your science as a rinse test with regard to containers and paper board?

A. Yes.

Q. What are rinse tests?

A. Rinse tests are bacteriological tests employing sterile water introduced into a container for the purpose of rinsing it, thereby freeing up, loosening from the walls the organisms that may be there and then proceeding to take out by bacteriological methods the rinse water.

Q. Have you employed the rinse test in the various experiments that you have conducted on the paper board and the single service container here?

A. Yes.

Q. Are there any other tests that are deemed better in the practice with regard to attempting to detect bacteria?

A. There is nothing better from the standpoint of enumeration, counting of bacteria, than the rinse method. The broth test mentioned this morning is a better method in that it is a much more severe test and will show the presence—the sterility, or the absence of organisms in a much more satisfactory way scientifically than by depending entirely on the rinse test.

104 Mr. Gariepy: I now ask that these documents be marked Plaintiff's Exhibits 16, 17 and 18 for identification.

Master Grossman: They may be so marked.

(The documents referred to were thereupon marked by the Reporter "Plaintiff's Exhibits No. 16," "Plaintiff's Exhibit No. 17," and "Plaintiff's Exhibit No. 18," all for identification.)

Mr. Gariepy: Q. Doctor, I show you Plaintiff's Exhibit 16 for identification which purports to be one sheet with printing on both sides.

A. Yes.

Q. Have you ever seen it before?

A. Yes.

Q. Is that issued, published and circulated to the public in general previous to the filing of this litigation? It is entitled "Single Service Containers for Milk and Milk Products", by J. R. Sanborn and Robert S. Breed, New York State Agricultural Experiment Station, Geneva, New York.

Mr. Rall: Give him the date.

Mr. Gariepy: You may look at it.

Mr. Schaefer: That is objected to.

Mr. Gariepy: Q. That suit was filed February 6th, 1939.

105 A. I know this is a very recent publication.

Q. Do you know whether this is before or subsequent to the litigation?

A. I don't know.

Q. You don't know?

A. No.

Mr. Gariepy: Well, then, I withdraw it. My point is I think all of this information that has been put out by the witness on the stand, with Dr. Breed, concerning single service containers and the matter of the sanitary aspect, has been put out previous to the institution of this lawsuit, are material.

Master Grossman: I cannot accede to that bold statement that anything that has been put out is material.

Mr. Rall: Certainly the Court in determining whether the City has acted reasonably or unreasonably, is entitled to put itself in the position that the City was with respect to the facts and the current knowledge public at the time, before this suit was filed, and it seems to me that on the basis of whether the City has acted reasonably, for instance the City might say—

Master Grossman: When was this ordinance passed?

Mr. Rall: The ordinance was passed some time ago.

Master Grossman: How long ago?

Mr. Gariepy: 1935.

Mr. Rall: 1935.

106 Master Grossman: Would that make everything published after that material here?

Mr. Rall: On the question of whether the meaning to be given the ordinance as to the definition of the standard milk bottle, I would say that anything that happened after that, of course, would not necessarily assist the interpretation of that, but whether or not the City has acted unreasonably in refusing to approve this container makes it quite important, it seems to me, for the Court to know what the City had before it at the time.

Master Grossman: There is no showing here that the City had anything before it.

Mr. Gariepy: I have asked the witness whether he had any request from Dr. Black or from Dr. Bundesen.

Master Grossman: When you get to something concrete here, we will pass on it.

Mr. Gariepy: I asked the witness this morning myself whether he had any efforts on their part concerning any interest.

Master Grossman: And he answered you, didn't he?

Mr. Gariepy: No. You ruled that he couldn't answer this morning.

Master Grossman: He said there had not been a request.

107 Mr. Gariepy: You struck it out, as I understood. If not, that's O. K. with me.

Master Grossman: I doubt whether it is material. I don't see that it is necessary for the City to go ahead and constantly request everybody to give whatever information he has on the subject. They may not have thought he is an authority on the subject.

Mr. Gariepy: But we think he is an authority.

Master Grossman: But that doesn't mean that they have to request from him all information that he might be possessed of.

Q. Did they ask you for anything, Doctor? Did the City ask you for any information?

A. I have provided manuscripts to Dr. Black.

Q. Have they asked you for anything, yes or no?

A. Yes.

Mr. Gariepy: Q. When was that, Dr. Sanborn?

Mr. Schaefer: I object to that.

Master Grossman: I will let him answer.

Mr. Schaefer: I can't see the materiality of it.

Master Grossman: I don't think it is material.

The Witness: That was during March or April.

Mr. Gariepy: Q. 1939?

A. Yes.

Q. Tell what City official made request of you for 108 this information or data?

A. Dr. Black asked for the manuscript or paper.

Q. Will you look at Exhibits 17 and 18, marked as Plaintiff's exhibits for identification, and tell me whether they were published for use by the public in general, for distribution to boards of health of municipalities, previous to the institution of this litigation?

Mr. Schaefer: That is objected to as immaterial.

Master Grossman: I sustain the objection. There are a great many of people writing articles in all the periodicals in the country and some of them may be sound and some not sound.

Mr. Gariepy: These are articles that were edited by this witness on the witness stand.

Master Grossman: Then he can testify what he knows about the subject and we will decide whether the City's action was reasonable or not, if that is in issue here.

Mr. Gariepy: The same thing applies to Exhibit 12, I take it, Master, the one I showed you this morning?

Master Grossman: Yes. Make your record and ask him whether those documents were published at a certain time. I will let you ask him that. I am ruling, counsel, that I will let you make your record.

109 Mr. Gariepy: All right.

Q. Doctor, will you tell me when Plaintiff's Exhibit 17 for identification, which I showed to you, was published?

A. That was published March 17, 1938.

Q. I show you Plaintiff's Exhibit 18 for identification. Do you know when that was published?

A. This is not one of my publications. I can find the date of publication on it.

Q. Do you know the date of publication of Exhibit 18?

A. The only date here on that is October 9, 1933.

Q. Do you know whether that is the date of the publication of that exhibit?

A. That is the date this report was made.

Q. With regard to Plaintiff's Exhibit 12 for identification, you think it was subsequent to February 6th, 1939?

A. The date is on here, April, 1939.

Mr. Garipey: Let the record show that we offer to prove that these Plaintiff's Exhibits 12, 17, 18 and No. 16 were being generally used and circulated, published, and all except No. 12 were published for the general public and for the consumer cities and board of health, previous to the institution of this litigation.

110 Q. They were for general use and circulation upon request, Doctor?

A. Yes.

Master Grossman: Just to get the record clear, since this is both the taking of testimony under reference and taking of testimony by deposition, I think that possibly there ought to be something in the record to show the rulings that are made by the Master are approved, the part that is agreed to, by the party that is taking the depositions. Ordinarily on a deposition the examining officer does not have any power to rule on objections. I am permitting most of the evidence to go in so as to have the record made up showing what evidence was offered, but I think the record ought to be clear here that when I rule on an objection and keep evidence out, that the party who is taking the deposition is agreeable with that method of practice.

Mr. Rall: I have been waiting to see what you did keep out and I will make an offer for the deposition of anything that I think ought to go in, but your Honor has been very liberal in letting the things go in, and the order of court provides that the defendants may object when the deposition is offered in evidence, to its materiality, without objecting here, so that they are protected in
111 so far as the materiality of anything that goes in, but

I join in the offer of these documents; of course that is understood.

Master Grossman: Whatever Mr. Gariepy offers, a joint offer is made by you.

Mr. Rall: Yes. As a matter of fact, the appearances show that he is of counsel in my case and I am of counsel in his case.

Master Grossman: Just so the record will be straight so far as the deposition is concerned, when I rule on something it will be applicable to the deposition unless you make an offer of proof.

Mr. Rall: Correct.

Master Grossman: Or you want to have the record show what your evidence is.

Mr. Rall: Correct.

Mr. Gariepy: Q. Have you printed reports of the conference held on sanitation of paper milk containers at Geneva, New York, in March of 1939?

A. No. I don't know of any such conference. There were two conferences on paper milk containers; one was in July, 1937, and one was in May, 1938, I believe. I think you have copies of them there.

Mr. Gariepy: I ask that this second conference on sanitation of paper milk containers be marked by identification as Plaintiff's Exhibit 19.

112 Master Grossman: It may be so marked.

(The pamphlet referred to was thereupon marked by the reporter "Plaintiff's Exhibit 19 for identification.")

Mr. Gariepy: And mark this one Plaintiff's Exhibit 20 for identification.

Master Grossman: It may be so marked.

(The pamphlet referred to was thereupon marked by the reporter "Plaintiff's Exhibit 20 for identification.")

Mr. Gariepy: Q. I show you Plaintiff's Exhibits 19 and 20 for identification; first, 19; what is that?

A. This is report of the second conference on sanitation of paper milk containers held at Geneva, New York, on May 2nd, 1938.

Q. Do you know anyone who, for and on behalf of the board of health of the City of Chicago, attended said conference?

Mr. Schaefer: That is objected to.

Master Grossman: Yes or no, do you know?

A. Yes, I know.

Mr. Gariepy: Q. What is the answer as to whether there was or there was not?

Mr. Schaefer: The whole thing is immaterial, if the Master please.

113 Master Grossman: Let him go ahead. I think it is immaterial.

The Witness: Yes.

Mr. Gariepy: Q. Who was there at that conference for and on behalf of the Board of Health of the City of Chicago?

A. If you insist, Master, I would just as soon answer that, but I would like to keep, so far as possible, names out of my testimony. I don't feel there is anything to be gained by naming him. If you insist, I will.

Q. You feel embarrassed if you name him and you will feel unembarrassed if you don't, is that right?

A. (No response.)

Master Grossman: I don't know, now, you are saying there is somebody who was there from the City of Chicago. They may say he did not represent the City of Chicago, if they know who he was, but I don't insist on it.

Mr. Gariepy: All right.

Q. Doctor, with regard to Plaintiff's Exhibit 20 for identification, what is that?

A. This is the report of conference on sanitation of paper milk containers, New York Agricultural Experiment Station, Geneva, New York, held on July 12, 1937.

Q. Were those articles, the substance of such conference, out for general circulation and publication to all
114 cities and boards of health?

A. Yes, sir.

Q. I will ask you the same question: Was there anybody for and on behalf of the Board of Health of the City of Chicago present at the time the conference was held as described in Plaintiff's Exhibit 20 for identification?

Mr. Schaefer: That is objected to.

Master Grossman: I will let him answer.

A. If my memory serves me, yes, but I have not carried those things in my mind for two years, so I am not positive.

Q. Was it the same person who was present at the other one?

A. Yes.

Mr. Schaefer: I did not object to his answering the question.

The Witness: If I might be allowed to say something, as a scientific man it has been my policy to, in conducting investigations of this sort, not name the companies or

name individuals because it would be sometimes embarrassing and it is sometimes faithlessness to the task I have undertaken; so in order to avoid anything of that sort, I just have not named names at all. That is the only reason for it.

115 Mr. Schaefer: Q. You are not afraid of embarrassing the City of Chicago by naming him, Doctor?

A. No.

Master Grossman: Before you go any further, has this exhibit been received in evidence, 15-A?

Mr. Gariepy: At the beginning of the afternoon session, 15-A was received in evidence in lieu of Exhibit 15, Master.

Master Grossman: All right.

Mr. Gariepy: I now offer Plaintiff's Exhibits 19 and 20 for identification.

Mr. Schaefer: I object.

Master Grossman: I sustain the objection to Plaintiff's Exhibits 19 and 20 for identification.

Mr. Gariepy: With regard to Exhibits 2 and 3, counsel—Exhibit 2 is an exhibit attached to the complaint and filed at the time of the filing of the suit, and I am offering that in evidence here at this hearing, that is Plaintiff's Exhibit 2. Plaintiff's Exhibit 3 is the blank that the Doctor has testified about.

Mr. Schaefer: I have no objection.

Master Grossman: They may be received.

(Said cartons so offered and received in evidence were marked "PLAINTIFF'S EXHIBIT NO. 2" and
116 "PLAINTIFF'S EXHIBIT NO. 3" and are attached hereto and made a part hereof.)

Mr. Gariepy? Q. Doctor, will you look at Plaintiff's Exhibit 3 and tell what relation it has to the finished container, Plaintiff's Exhibit 2?

A. It has a very direct and important connection.

Q. What is it?

A. The condition of the paper from which the container is made, the condition of the paper blank, the bacteriological condition of the paper determines the condition of the finished container. We have proven bacteriologically and by scientific methods that the paper blank that has a low bacterial count yields containers that have low bacterial count. On the other hand, paper board that has high bacterial counts—and of course there have been many such, because this thing has been in experimentation for a long

time, and you run into paper board that has higher bacterial counts and those containers will also have high bacterial counts; so there is a direct connection between the sanitary condition of the blank and the sanitary condition of the finished container. That was true in spite of any of the other factors I mentioned. Our investigation included for example investigation of paraffin. There was only three things, the paper, the adhesive that closes it and moisture proof paraffin that moisture proofs it. We 117 were able to show and it has been proven conclusively that the paraffin is not a source of appreciable contamination; in fact, fully refined paraffin and used paraffin are essentially sterile. My investigation of adhesives has shown that there is no contamination from the adhesives, I mean the adhesives used are essentially sterile; so that that eliminates those two factors, that we went to right from the start. That leaves the paper board and that is one of the direct reasons why I stated that the bacteriological condition of the original board determines the final condition of the finished container bacteriologically; it is fundamentally important; it is essential that the paper board have a low bacterial count.

Master Grossman: Q. Why?

A. Because the finished container, the paper, will be a sanitary container and will have a low bacterial count in spite of what treatment it might get. Moisture paraffining adequately done is the next thing, but it will still be the same container.

Q. Would you say the bacteriological count of the board is high, and that that would be immaterial if enough paraffin were applied?

A. No, that is not sufficient.

Q. Then the paraffin does not act as a coat of armor 118 against bacteria?

A. It is not an effective sterilizing agent.

Q. It is just an imperfect sterilizing agent?

A. It is a secondary function, the paraffining, to equal what effect it can along the less resistant forms of bacteria.

Q. Its first purpose is to protect against moisture?

A. To prevent the milk from getting into the paper board, for the convenience of the housewife, to prevent leakage.

Q. That is the first purpose?

A. In my opinion.

Q. The secondary purpose is to act as a coat of armor against any bacteria getting from the board into the milk?

A. That's right.

Q. But as to that, you say that there is some pores in the paraffin which would enable bacteria to get into the milk if there were enough bacteria in the board?

A. Yes, dirty contaminated paper board must never be used for milk because bacteriological tests on such board, even well paraffined board, are not satisfactory. The board used must be a sanitary bacteria-free board, essentially bacteria-free, to start with.

Mr. Gariepy: That is all, Mr. Rall. Do you care to 119 ask the Doctor any questions on your deposition?

Mr. Rall: I offer to show by this witness that among public health men generally and in the milk industry there is no such thing and was not in January, 1935, a glass bottle which was known or described as the standard bottle. I understood that your Honor refused to let him testify on that subject this morning.

Master Grossman: I don't think the question was asked on that subject. He was simply asked about what kind of bottles they were. You started it by asking him that and he did not follow it up with any other question. You put your question and I will rule on it.

Mr. Rall: Q. Doctor, is there now or was there in January, 1935, a glass milk container known among public health men or in the dairy industry as a standard milk bottle?

Mr. Schaefer: That is objected to.

Master Grossman: First define what you mean by standard milk bottle.

Mr. Rall: I am asking him whether there was such a thing known as that.

Master Grossman: Whether there was such a thing known as that?

Mr. Rall: Yes, that's right.

Master Grossman: Proceed.

120 Mr. Rall: One of our objections to this ordinance is that they do not define it.

The Witness: So far as I know, there was no such standard in such things.

Mr. Schaefer: I move to strike.

Master Grossman: I will let you cross-examine him.

Mr. Rall: Q. I show you Plaintiff's Exhibit 12 which you say was printed at what time?

A. April 9, 1939.

Q. Is that a reprint from some journal or paper?

A. It is a reprint.

Q. From what?

A. From the April, 1939, issue of "The Milk Dealer," which is a trade journal.

Q. And when did you say was The Milk Dealer from which that is a reprint published?

Master Grossman: Have you the same articles that you had before?

Mr. Rall: Yes.

Master Grossman: He gave the date.

The Witness: That is March or April, 1939, only a month or so before the address given in Cleveland, Ohio, last October.

Mr. Rall: Q. Do you know whether it was published before the 27th of March, 1939?

A. No, I couldn't state as to whether it was or not.

121 Q. Is Plaintiff's Exhibit 16 a reprint, and if so, from what?

A. This is a report of an address.

Q. Is the document itself a reprint?

A. So far as I know, the document is a reprint directly of an address given.

Q. From what periodicals?

A. It is a reprint, that is a separate reporting, a reprint of a paper read before the annual conference, the joint annual conference the American Association of Medical Milk Commissions and Certified Milk Producers' Association of America, at the Clift Hotel, San Francisco, California, on June 13 and 14, 1938.

Q. It shows on the first page, reprint from February, 1939, "Certified Milk."

A. Yes, sir.

Q. Can you state as to the extent or the nature of the circulation and what it is?

A. It is a journal.

Mr. Schaefer: That is objected to.

Mr. Rall: Q. Do you know where it is circulated?

A. No.

Q. Plaintiff's Exhibit 17 appears to be a reprint from the "Paper Trade Journal." Do you know anything
122 about the extent or the nature of the circulation of that periodical?

A. Yes.

Mr. Schaefer: That is objected to.

Master Grossman: Let him answer.

A. The "Paper Trade Journal" is generally distributed and subscribed by by the paper and pulp industry.

Mr. Rall: Q. Plaintiff's Exhibit 19 contains both the report of the second conference on sanitation of paper milk containers and an editorial signed "J. H. S." Who is that?

A. J. H. S. I believe refers to Dr. Schroeder who is editor of the journal.

Q. Is that a reprint from the journal of milk technology?

A. Yes.

Q. Both the conference and the editorial?

A. Yes.

Q. Do you know anything about the circulation or the extent of circulation of that periodical?

A. Yes, it is circulated widely among the technical departments of the dairy industry.

Q. Do you know whether or not it has any circulation in health departments?

A. Yes, it has a circulation among health departments.

123 Mr. Schaefer: I want to make the same objection with respect to the use of these periodicals.

Master Grossman: You may make a motion to strike at the conclusion.

Mr. Rall: Q. Plaintiff's Exhibit 20 is report of the first conference. That appears to be reprinted from the "Milk Sanitarian." Do you know anything about the extent of the circulation and nature of the Milk Sanitarian?

A. The Milk Sanitarian so far as I am acquainted with it—there has been a change, I think Milk Sanitarian is now the General Milk Technology.

Q. Was the circulation of that substantially the same as the present?

A. The Milk Sanitarian is this journal.

Mr. Rall: In the Ex-Cello case, I offer these EXHIBITS 12, 16, 17, 18, 19 and 20.

Master Grossman: I have excluded them in the other case.

Mr. Rall: Yes.

Master Grossman: I will have the same ruling here. They may be excluded.

Mr. Rall: They may be certified, however, as being offered.

Master Grossman: Yes.

124 Mr. Rall: That is all.

Mr. Gariepy: Doctor, I want to ask you one more question on direct examination:

Q. Taking Plaintiff's Exhibit 3, the blank there, before it is paraffined and having it filled with milk, would you say that that container if filled with milk after the paraffining is essentially sterile?

A. Yes.

Mr. Gariepy: You may cross-examine, Mr. Schaefer.

Cross-Examination by Mr. Schaefer.

Q. Where are those blanks printed, Doctor?

A. Those blanks are printed at the converting plant.

Master Grossman: Q. At where?

A. At the converting plant I mentioned this morning.

Q. What is that?

A. The Gardner-Richardson Company of Middletown, Ohio, which receives the flat paper and proceeds to cut and trim as necessary, and print.

Mr. Schaefer: Q. You are familiar with the operations of paper plants and paper mills, are you not, Doctor?

A. Yes, sir.

Q. You are familiar with the sanitary problems involved in the process of those mills?

A. Yes.

125 Q. What are the principal factors in a paper mill that determines the sanitary quality of the products of that mill?

A. The control maintained over the micro-organisms that may invade the mill or develop therein.

Q. What are the points of attack selected by the micro-organisms?

A. The micro-organisms will attach themselves in many cases to rough surfaces and if there are any dead ends in the system, pipe lines, that cannot be reached to clean, there they will develop and incubate.

Q. Will the quality of the raw material used in making paper influence the bacterial content of a finished paper board?

A. Yes.

Q. Will the use of green logs affect the bacterial content of paper boards?

A. No.

Q. It will not?

A. No.

Q. No effect whatever?

A. No.

Q. When you refer to prime logs, what do you mean by that?

A. I mean prime stock—not prime logs—price stock; that is wood pulp that has been manufactured mechanically or commercially direct from pulp wood, that is prime pulp.

126 Q. Will the use of logs that have pitch pockets in them affect the bacterial content?

A. No.

Q. How about the use of molded logs?

A. Molded?

Q. Yes.

A. No, there is no evidence that they will affect the bacterial count of the finished paper going through the process. The only way, if I might continue with that, that they might influence the development of organisms would be if air currents should carry spores from the wood pile into the mill or in the plant if the workers might carry the spores on their boots or clothing into the mill, but that is a problem of mill sanitation. In such cases in the presence of moisture, pulp might mildew but that is not a mildew, that is a fungus and that is not a bacterial trouble, and a fungi is more easily eliminated than some of these spore-forming bacteria that are highly resistant to heat and chemicals.

Q. Will the presence of fungi in the wood affect the bacterial content of the board?

A. No.

Q. It will not?

A. No.

Q. That is because of the influence of heat?

127 A. Heat and chemicals.

Q. What is meant in the paper industry by the term "waste"?

A. Waste, in the paper industry, refers to waste papers—I suppose you mean.

Q. Is there a term—

A. Waste paper.

Q. Is there a term in the paper industry "waste paper"?

A. Yes.

Q. Waste paper?

A. Yes, sir.

Q. What does that mean?

A. Waste or mixed paper refers to a class of paper products that are collected and re-used, by a mill, in making fresh paper.

Q. Collected from where, Doctor?

A. Waste paper may be collected from offices, department stores, homes or from brokers, that is waste paper dealers acting as brokers.

Q. Is there any waste paper in the customary operation of a paper mill itself?

A. You have different classes of paper mills. In certain classes of paper mills there is never any waste paper enters that mill. There are some mills that are almost exclusively waste paper users, that is, much of their operation employs the use of waste paper, but you have many different classes of mills.

Q. (By Master Grossman.) You have what?

128 A. You have many different classes of mills, based on the type of raw materials they employ.

Q. Is any of this waste paper used in the manufacture of these cartons?

A. No.

Q. Is it possible that you could use or re-use some of these used cartons?

A. No. In the manufacture of containers like this?

Q. Yes.

A. No. The specifications are so rigid for manufacture of stock of this sort that it is impossible economically or from a sanitary standpoint to use or re-use any such waste paper.

Q. It is impossible from a sanitary standpoint?

A. Yes.

Q. As a physical proposition, it could be used?

A. No, not from a physical point of view, either, because of the physical conditions and tests that a board of this sort has to meet, I mean the specifications a board of this sort has to meet such as folding tests and strength tests and rigidity.

Q. If this material passed the test originally, why couldn't it pass it again?

A. You see, to use this same board—is that what you mean?

Q. Yes.

A. Properly handled trim from container of that 129 sort, of course that is a single service container, but trim from a container of that sort might be used.

Q. What do you mean by trim?

A. The part that is cut off here.

Q. Why couldn't the whole container be used? It has the pulp in it.

A. Of course, there is ink on it.

Q. What?

A. There is ink on it, which would not be permitted.

Q. But you might develop a process for removing the ink?

A. Yes, but it would not be satisfactory.

Q. Does that ink go into the pores of the container?

A. No. There is very little penetration of the ink.

Q. There must be some penetration in order to make holes?

A. For the surface fibers.

Q. They might just chip it up and then use the pulp. I was wondering if there might not be a reconditioning process here for these containers.

A. That is at the very surface.

Master Grossman: Go ahead. Pardon the interruption.

Mr. Schaefer: Q. What is meant by secondary stock?

A. Secondary stock is a vague term and it is difficult 130 to define it because it means different things pending on who uses the term. Its vagueness is the biggest advantage in it.

Q. What does it mean as you say it?

A. Secondary stock is pulp or paper that cannot be classed as prime. It has been in the hands of converters or consumers.

Q. What does secondary stock mean as others use the term?

A. As others use the term they might mean what we call mixed waste papers.

Q. What does that mean, Doctor?

A. That is material I mentioned previously collected from institutions and department stores and homes.

Q. Is that all they might mean by the use of that term?

A. Yes, of course you have varying degrees or quality in such stock; you have such material as dump stock which does not enter into manufacture of any food containers or any type of food container, that is the lowliest and the last type in the classification I have mentioned.

Q. What is meant by chip?

A. Chip is composed of mixed waste papers.

Q. You cannot specify beyond that any particular kinds of mixed paper; waste paper?

131 A. No. It may not consist exclusively of the lowest grade of waste papers but be largely composed of waste papers which has an indefinite classification; it might be excellent waste paper such as might come out of an office building, executive offices in a large building from the top stories, you would get some excellent material, waste papers, bond paper, clean paper, but on the other hand, in other places you may get cigarette stubs and other materials in the waste paper baskets.

Q. What do the terms "broke" or "trim" mean?

A. Broke?

Q. Yes.

Master Grossman: How do you spell it?

The Witness: B-r-o-k-e.

Mr. Schaefer: Q. Trim is identical, they both are the same thing, Doctor.

A. Yes, broke and trim come under general classification of broke, but they mean something slightly different as used by the trade. Broke is paper that has come off of the machine, off of the paper machine, but is not going to be used, is not going to be fabricated further, it is not going to be converted; it is used, re-used, it comes off of the machine, if the machine breaks down, they have a lot of extra paper produced that they put in carts and take it back and use it. Trim may be illustrated by this
132 blank where you have the cuttings, the trim is the cuttings that are left over after the fabrication or during the fabrication or the converting of the paper blank, or any other kind of paper product where there is cutting or trimming.

Q. That is where you want to produce a definite shape or a piece of paper?

A. Yes.

Q. Is it physically possible, Doctor, by the use of

secondary stock either exclusively or mixed with what you call prime stock, to produce paper board which in outward appearance is identical with the paper board used in Plaintiff's Exhibit 3?

A. Well, that is not very clear to me, counsel, to answer your question directly as I think you probably mean it—I would say no. On the other hand, it is possible to cover that secondary stock with a so-called virgin stock or prime stock, covered or a layer over the surface, but it give it the appearance, if you dip into it, you will see there is this colored material which contains an ink and other foreign matter and you wouldn't mistake it for trim stock because it would be gray, it would be discolored.

Q. Isn't there any way of bleaching it as it is 133 going through the mill?

A. Yes, it can be bleached but it cannot be very satisfactorily at present.

Q. You mean there are such processes that remove all of the ink?

A. There are processes and they are not generally used because they are impossible of removing ink economically, that is a hard thing to do.

Q. Assuming a bleaching process was used and that secondary stock was used, would it be possible to produce a container, which from a physical examination, outward examination of the container, would be the same type of board as that contained in Plaintiff's Exhibit 3?

A. It would not appear the same.

Q. How would it differ?

A. In prime stock you have strength, you have rigidity.

Q. Can you determine one thing at a time, and can you determine strength by looking at it?

A. You mean by looking at it?

Q. That's right.

A. Of course, no, you would never mistake it, though; there is a softness, a lack of strength.

Q. How will you tell that, Doctor?

Mr. Gariepy: He is telling you now, counsel.

134 The Witness: The complete method of telling your board?

Mr. Schaefer: Q. I mean by ocular examination.

A. You might not be able to but I would be able to. After you have seen a number of them, you wouldn't mistake them at all. This has the substance and rigidity

that you can only get from prime stock. The other material that has been re-worked once is soft and tends to collapse.

Q. Can you determine softness and rigidity by feeling of it?

A. By feeling of it.

Q. By looking at it, first?

A. Aside from the color of it, you might not be able to, definitely, but it would be a different color.

Q. (By Master Grossman.) Distinguish between what?

A. Between this virgin material or prime stock, and paper board made out of mixed waste papers.

Q. Waste paper not necessarily consisting of used cartons?

A. Yes, any waste paper. It has a heterogeneous appearance, mixed waste paper has a heterogeneous appearance, I mean it is not uniform.

Mr. Schaefer: Q. Visible to the layman?

A. Yes.

135 Q. The uninitiated?

A. Yes. For example, if you will allow me to give you an example, a type of box which is referred to commonly as a shoe box, a box you see in the shoe store, that you would never mistake for paper intended for milk; that is the type of box you can make, it is flimsy, it hasn't got the characterization that you would feel and see.

Q. How about shredded wheat biscuit box, for example?

A. Now, to name any particular type of container or type of foods, dry foods may be packaged in containers that are not as carefully made or of as high quality materials as are foods that are moist or semi-liquid and yet in those cases there is very often a liner between the food and the container, but it may come in direct contact with it.

Q. Your thought is that containers of that type may differentiate from containers made of prime stock?

A. Yes.

Q. Without any scientific examination?

A. I don't know about the intelligence of your layman doing that, but a person of discrimination should be able to tell, for example a shoe box, over a paper container.

Q. How about another food container box with a paper container?

136 A. That would be the breakfast food cartons, or that container board from that ice cream fiber can.

A. Are you able, without a scientific examination of paper, to determine in every instance its bacterial content?

A. By looking at it?

Q. Yes.

A. I guess I don't understand your question.

Q. It is as simple as that; you understand it.

A. No, you couldn't estimate the bacterial count by visual examination.

Q. Now, can you determine without a scientific examination what type of material went into that container?

A. Yes, you can determine the type of material that went into the container.

Q. Now, suppose there was 99 per cent prime stock used and 1 per cent secondary stock. Can you determine that?

A. Yes, sir.

Q. You could?

A. Yes, sir.

Q. Without a scientific examination?

A. By examining the microscopic details, yes, the certain fibrous material there that you can detect.

Q. Could you do it without a microscope?

A. Yes.

137 Q. Suppose the percentage is one to one thousand?

A. Of course—

Mr. Garipey: I object, Master, going into these infinitesimal matters. Let's take the subject matter that the witness has testified to on direct as made at a certain mill with a certain stock and let's not ramble all around because we will be here ad infinitum. The Doctor was only asked concerning the stock of the container before you. What else he has made and what it is made of and how it is made and the process, I think that ought to stay out. He is an expert witness and I am trying to get down to the meat of the thing.

Master Grossman: Overruled. He may answer.

A. I beg your pardon. If I might enlarge on that, if you are going down to any infinitesimal quantities there would be a time I would not be able to attempt it but if you notice on the ink, contaminated weak secondary stock, if that goes into a virgin material of this sort, you can detect it because of the difference in formation, because of the heterogeneous character that you notice when you

notice the presence of the material and the trace of ink even with the naked eye.

Mr. Schaefer: Q. And some other man who has spent his life in that work could make that differentiation?

138 Yes, sir.

Mr. Gariepy: I object. It is not that test but it is what this product before you now has been through or I will object.

Master Grossman: On a question of reasonableness, they might possibly take into consideration that cartons of other composition might be substituted.

Mr. Gariepy: But we are only on trial for this one container.

Master Grossman: It goes to the reasonableness of the ordinance. They might go sometimes as far as to forbid the use of something which is easily imitated.

Mr. Gariepy: We have no objection to telling all about containers made out of second grade stock.

Master Grossman: I will let him answer the question.

Mr. Schaefer: Q. Why is the use of paper previously commercially used considered unsanitary?

A. I suppose you mean in the consumer's hands, used by the consumer?

Q. Yes.

A. It is considered, it may be from our standpoint because of its unknown character because we don't know where it came from.

Q. Is it considered unsanitary from your point of view?

139 A. I consider mixed waste paper unsanitary for food containers when they come in direct contact with the food, depending of course on the character of the food. Dried foods have not the strict requirements that moist wet foods have.

Q. Is broke or trim as sanitary material for the manufacture of paper container as virgin pulp?

A. It is virgin pulp. Broke trim is virgin pulp. It has never been in the hands of the consumer.

Q. It is not virgin pulp in the strict sense of the word, is it?

Mr. Gariepy: I object to arguing with the witness.

Master Grossman: Overruled.

A. In the strict sense of the term, broke is virgin pulp.

Mr. Schaefer: Q. What does virgin pulp mean?

A. I don't know whether there is a dictionary definition of that or not but we have defined it as pulp that has not previously been used for commercial purposes.

Q. I am aware of that, Doctor. What I am getting at is the basis of your definition and what I want to know is whether or not that is the ordinarily accepted meaning of the word "virgin pulp"?

A. Yes that is.

Master Grossman: Q. What is the broke, then?

140 A. The broke is virgin pulp which has not been out of the mill. It is just some additional paper that has been brought back to the machine and put through the process again.

Mr. Schaefer: Q. What term describes pulp which has not yet been made into paper?

A. Pulp that has not yet been made into paper?

Q. Yes.

A. Pulp that has not been made into paper is called lap stock.

Q. As distinguished from virgin pulp?

A. No, that is not the case. Pulp for paper making is bought into the form of laps for thick sheets. That is virgin pulp that is going to be broken up.

Q. That is virgin pulp?

A. That is virgin pulp.

Q. That means pulp that has not yet been made into paper?

A. Yes.

Q. And that is what virgin pulp means?

A. That plus the paper, the pulp that is made directly from the wood—it did come from the wood—you can make your pulp directly from the wood or I can buy it from you as pulp. It is all virgin pulp.

Q. But it is pulp which has not yet been made into paper?

141 A. You can sell pulp.

Q. Is virgin pulp, pulp which has not yet been made into paper?

A. No. It is not as easy as that.

Master Grossman: Q. What?

A. It is not as simple as that.

Mr. Schaefer: Q. What difference is there between broke and trim and other previously fabricated paper, that leads you to say that the one may be included in the term virgin pulp and the other may not?

A. Will you give me an example of that, please?

Q. I mean, do you regard broke or trim as virgin pulp?

A. Yes.

Q. As being, as you say, your definition of virgin pulp?

A. Yes.

Q. What is the basis for the distinction between permitting the inclusion in your definition of broke and trim and excluding other secondary stock?

A. The broke I speak of has never left the mill, it has just been made into a sheet and is taken right back and re-made; it has never left the mill; it continues to be virgin stock. I object to the use of "waste paper" for containers for liquid or semi-liquid foods because the 142 mixed waste papers are all of unknown origin, it may come from homes where there is disease; it may contain cigarette stubs and all sorts of waste materials.

Q. How is your broke handled in a typical plant?

A. Broke is removed directly from the machine where it is produced, into cars, and taken back almost immediately to the beater or fibre disintegrater where it is immediately disintegrated and sent right back over the machine.

Q. Do you regard broke or trim as sanitary a material as lap stock?

A. Properly handled, yes.

Q. You see no difference between the two?

A. I don't like to include trim with broke because trim—there are so many different ways of producing trim, and so many different sources of it. When you speak of broke, you mean it is produced by the machine where the paper is being made and is specific virgin material, specific prime stock and if trim happened to come from that same plant, some sort of trim, ends or the end of a roll or something like that, that would also be specific prime stock.

Q. Suppose it did not come from that mill but nevertheless it has never been previously commercially 143 used; would that be virgin stock?

A. If it had never been previously commercially used and the mill from which it is produced was also operating under micro biological control, I would consider that prime stock.

Q. That is micro biological control?

A. Under approved bacteriological control.

Q. By whom?

A. In the ultimate analysis it will be the health department.

Q. What health department?

A. The city that is interested in controlling or supervising the manufacture of the container and board to be used in that city.

Q. That is, you regard it as important for the health department of a city which is permitting the use of paper containers to exercise sanitary control over conditions in the mill in which the paper is made?

A. They should have a knowledge of sanitary conditions there.

Q. How should they acquire that knowledge?

A. One way of acquiring that knowledge—and mind you I don't say how they should acquire it, but one way to acquire it is to designate a laboratory as might be done in the case of vitamin D milk, designate a laboratory for the sanitary survey or supervision of that plant, to conduct such detailed and exhaustive tests as the health department may not be equipped to do it because of lack of facilities.

Q. Is there any other method that is recognized, Doctor?

A. There is another method I think and that is the one I have in mind is for a health department to authorize a qualified person to represent the Commissioner of Health and inspect for the health department of the city that milk, giving a report to the Commissioner of Health on his findings.

Q. In the handling of broke or trim, can you say whether it is used properly, consistently, it depends on how it is handled; how can you determine how it is handled; how can the health department determine how it is handled?

A. That would be part of the supervision and program of supervision or control that the health department worked out. I happen to know something about the way health departments are doing today and I am giving you the benefit of that in my testimony.

Q. That involves inspection of the mills?

A. That involves inspection of the mills.

Master Grossman: Q. That is inspection of the mill at

a place other than the community in which the health
145 department operates?

A. Yes. They can authorize inspection in any part of the country they want to.

Mr. Schaefer: Q. Do you know whether or not other mills could afford to produce paper containers unless they used broke or trim as an economic proposition?

Mr. Gariepy: I object to that because it is speculative and that would be a matter of the economic operation of the mill and that is not before you.

Master Grossman: I will let him answer.

(Question read by the reporter.)

The Witness: Yes, they could afford to operate without the use of broke or trim.

Master Grossman: Q. What would they use?

A. They would continue to run continuously and any trim or broke that was produced would be used for some other grade of paper, such as shoe boxes or something of that sort and the main line going along in a continuous process.

Mr. Schaefer: Q. Doctor, is the use of contaminated water supply a problem in the sanitation of paper mills?

A. Yes.

Q. Is it a pretty serious problem?

A. No.

Q. Do you regard it as the most serious problem?

146 A. No.

Q. Doctor, I am reading from what purports to be a copy of a paper presented by you before the Empire State Section of the Technical Association of the Pulp and Paper Industry, Syracuse, New York, November 13, 1937, reading this statement: "Mills are now viewing critically their water supplies and the condition of raw materials. They are studying the problem of white water utilization from the standpoint of recontamination of the system by undesirable bacteria, as well as from economic and operative aspects. Plants so fortunately situated as to have naturally pure process water do not ordinarily find it difficult to control the development of micro-organisms. Polluted supplies present at the onset a serious obstacle to mill sanitation, requiring careful attention to purification problems which may be aggravated by wide fluctuations in degree of pollution. Nearly all of the undesirable mill contamination comes from water, though

occasionally evidence points to organisms from pulp wood, lap stock, and various raw materials."

Mr. Gariepy: I object to the question unless counsel shows the entire exhibit concerning which he is quoting from and let the doctor identify it as evidence.

Master Grossman: Maybe the witness can answer 147 without examining all of that.

The Witness: Yes, I have no objection. I can answer without examining the whole document.

Master Grossman: Let the witness answer you first, he may be able to explain.

The Witness: I want to answer your question which is, is it the most serious something of that sort. I did say in the article it was a serious problem but you asked me if it was the most serious. I had in mind something—

Q. I will come to that.

A. That is one of the other problems, and also if I may make another statement.

148 Q. You will have a chance to go through the whole business, Doctor, if you want to wait.

A. Well, I happened to think that before the crowd in Syracuse which I addressed was composed of men who are not making board of this sort but they are making paper such as news print paper which does not require extra precautions, and, hence, I had to emphasize the importance of water purification, which I wouldn't have had to do to these people that use pure mountain water and use a sand filter and chlorination.

Q. (By Mr. Gariepy.) As used in the container here?

A. That is the one I am speaking of.

Mr. Schaefer: I will ask to have this document marked Defendant's exhibit 2 for identification.

Master Grossman: It may be so marked.

(The said document referred to was thereupon marked by the Reoprtter "Defendant's Exhibit No. 2 for identification.")

Q. (By Mr. Schaefer.) Will you examine that, Doctor, and tell me what it is, please?

A. That is a copy of the manuscript I read, which is not published, at the Syracuse meeting of the Empire State Paper Section of the Technical Association of the Pulp and Paper Industry, Syracuse, New York, November 13, 1937.

149 Mr. Schaefer: I offer that document in evidence.

Mr. Rall: Are you offering it?

Mr. Rall: I agree that it go in.

Mr. Schaefer: Yes.

Mr. Gariepy: No objection.

The Master: It may be received.

(The document, consisting of seven pages, photostatic copy, entitled "Microbidity in Pulp and Paper Manufacture," so offered and received in evidence, was marked DEFENDANT'S EXHIBIT NO. 2 and is attached hereto and made a part hereof.)

Mr. Schaefer: Q. Doctor, what are some of the problems in connection with the sanitation of paper mills?

A. Eliminating from mill systems foci of bacterial accumulation or development.

Q. What are some of those foci?

A. Those foci I started to enumerate and did enumerate a few in my original testimony. They are rough surfaces of equipment and dead ends and storage chests that are not washed where pulp is allowed to accumulate and where mill slime is allowed to develop, that is on the rough surfaces, and pipelines where no effort is made to curb the development of micro-organisms.

150 Q. How about white water? What is white water?

A. White water is re-used water.

Q. How about the use of white water, is that a problem in paper mill sanitation?

A. It is a problem in paper mill sanitation, stating generally.

Q. That is what I am asking about, Doctor, so let's keep talking the same language.

A. Yes.

Q. What is the most common source of water supplies of paper mills?

A. The most common source of water supply of paper mills is the use of rivers, artesian wells, canals, lakes.

Q. How about streams?

A. Sure, those head up a river. I was thinking of them as you asked the question. There are so many mills in the country and so many different types of mills. There are a great many using artesian well water and a great number are using river water. I suppose river water is the most common of all mills, river water is used most frequently by mills throughout the country, throughout the continent.

Q. Is there normally a direct connection between the

degree of pollution of water supply of the paper mill and the bacterial content of paper board made in that mill?

151 A. Speaking of the water supply, that is not treated?

Q. Yes.

A. Yes, water supply straight from the river.

Q. Yes.

A. Yes, there is a direct connection.

Q. Is the degree of pollution of the water supply of paper mills constant or does it vary?

A. It varies.

Q. It varies?

A. Yes.

Q. With what does it vary?

A. I beg your pardon?

Q. With what does it vary?

A. It varies with a number of factors. It varies with the amount of pollution the river receives, speaking now only of rivers because there is no pollution problem in connection with artesian wells; but in the case of river water supply it varies with the contamination it receives from the source of pollution.

Q. From what?

A. Sources of pollution, if it happens to be sewage or seasonal factors, it varies with the season. In the fall of the year with decaying leaves it might have a higher content of organism due to the increase in organic content.

Q. What about the spring of the year?

152 A. In the spring of the year a similar situation, with the spring freshets, the count in the river water goes up in the spring.

Q. Is the variation the same from one mill to another?

A. No.

Q. Is it the same in the same mill from one year to another?

A. No.

Q. It is a variable factor?

A. It varies continuously.

Q. What methods are available, Doctor, to determine the sanitary quality of the water supply in a paper mill?

A. By sanitary and bacteriological analyses.

Q. That means to take a sample of the water supply and analyze it according to the number of bacteriological methods?

A. A chemical method as might give a clue to pollution.

Q. Does the turbidity of the water supply affect the bacterial content of the paper board produced by the mill?

A. No. Turbidity may be due to a variety of causes. A turbid stream may be practically sterile. I find very little relation between the turbidity and the bacterial content of paper.

The Master: Q. Between what?

153 A. Between turbidity and the bacterial content of paper.

Q. How do you spell that?

A. Turbidity.

Q. Turbidity?

A. T-u-r-b-i-d-i-t-y.

Q. Turbidity.

A. Yes.

Mr. Schaefer: Q. That is suspended matter?

A. Yes, that is suspended matter.

Q. What are the causes of the build-up of slime in the paper mill system, Doctor?

Mr. Gariepy: If the Master please, I don't see the materiality of this inquiry. I asked nothing on direct about slime and build-up in a mill or in some other mill. As to the Cherry River Mill, we went into one mill only.

The Master: Mr. Schaefer may be of the opinion, and is trying to build up some evidence to support an argument that possibly there is a need for inspection of the whole process of manufacture and that may be a sufficient reason for excluding these cartons.

Mr. Gariepy: Because there is a need of inspection and examination in other mills wouldn't make the mill in question contaminated.

The Master: They may make a general rule applicable to all mills and they may decide to broaden the inspection or that the inspection may be too great so that
154 they will exclude that form of container. I don't know.

Is that your theory?

Mr. Schaefer: Particularly that, but I would rather not disclose the whole thing.

The Master: I will let him put in his evidence here.

Mr. Rall: If the finished product is sterile, they can take it apart with microscopes and broth tests and rinse tests.

The Master: I would like to ask you this question: Why do you say this is a single service container? Is that it?

A. Yes.

Q. Why do you call it a single service container?

A. It is to be used only once and then discarded.

Q. That is if the mandate is obeyed?

A. Yes.

Q. What is there to prevent these cartons from being used again?

A. Well, they can't be used again for milk.

Q. Why not?

A. Well, according to the law they couldn't be filled by dipping and they would have to go through a regular dairy, milk plant, which is inspected.

Mr. Rall: The carton is destroyed.

155 The Master: If it is destroyed.

Mr. Rall: No. The carton is defaced in the process of opening it. I will bring over some more dummies and your Honor can see that in opening this carton is torn and it is possible that the consumer might, by getting a funnel, pour it back, but so far as any commercial use the minute that pouring lip is torn you never would fool anybody into believing that it had not been used before.

Mr. Gariepy: You could not paraffin it back into shape.

Mr. Rall: I will bring over some dummies.

The Master: I understand your point. I am asking the witness what is there to prevent this carton being used again, whether the same size or cut down size.

A. It could not be used for that purpose. You cut it down and you would not have a suitable container and it is in the hands of a consumer and it will probably be destroyed and there wouldn't be any way of collecting the containers and these milk plants are under control and I don't see how it could be filled again.

The Master: All right.

Mr. Schaefer: Q. What are the causes of the build-up of slime in the mill system?

A. Micro-organisms are the cause of slime.

156 Q. Is a polluted water supply a contributing factor?

A. Yes, sir.

Q. Is the condition of the pulp wood as it goes into the mill system a contributing factor?

A. That is a very minor factor. We have been unable to show any direct connection. The treatment the wood gets is sufficient to kill all slime forming bacteria in the wood.

Q. How about air dissemination; does that contribute to slime?

A. That doesn't contribute to slime. It contributes more to the condition called mildew which is in the mill but there would be a fungus, there would be a colored spot on the pulp but that is not a sanitary matter. It is sort of an economic problem, it means losses to them, and that is why they try to cut that down.

Q. Is polluted water supply the only cause, in your opinion, for slime?

A. Most slime organisms have there origin in water supplies.

Q. Is there anything else?

A. Previous slime accumulations, slime development has been going on for twenty years and that is a continuous source of further contamination and even though you use a sterile water supply, unless you eradicate the slime 157 from the mill you would still have it, so that the previous accumulation plus the polluted water are the major causes of slime organisms getting into the mill system.

Q. The presence of slime built up in the mill system affects the bacterial content of the paper board?

A. Yes, sir.

Q. How can the presence of the build-up of slime in mill systems be determined?

A. By visual inspection, it is an accumulation in a plant site so it can be handled, it can be scraped.

Q. Are any of the pipes under the floor in the mill?

A. Yes.

Q. The accumulation might be in those pipes?

A. It might be.

Q. You might have to take up a floor in order to see it, visibly?

A. Yes, it would probably be after the ceiling of the floor below so that you could get at it from the floor beneath.

Q. But it would not be visible unless you opened up the pipes?

A. It would not be visible but you would see it in the materials coming out of the pipe.

Q. How would it affect those materials, Doctor?

A. In other words, how would it affect pulp?

Q. That is right.

158 A. It discolors pulp, causes discoloration.

Q. Uniformly?

A. Not uniformly; it breaks off, I can tell by your question, counsel, that you know a little about mill slime, and I am quite sincere about that. It breaks off at different times when the slime mass becomes too heavy and becomes accumulated sufficiently, it breaks off in masses; some parts are lodged, lined up, and other parts might be a little more—but you asked how it affects pollution. You can tell there is or is not slime by holding it up to the light. It may have an odor.

Q. Is it possible to make that inspection as the paper comes off of the final roller before it is rolled out?

A. For slime?

Q. Yes.

A. Yes.

Q. You can make that right at the mill, can you?

A. I beg pardon?

Q. You can make that right at the mill?

A. You can make that right at the mill, that is true. They don't want to make paper containing slime because it spots and doesn't sell.

Q. Doctor, I think you have answered this, but to be sure, is there any predictability about the extent of slime in paper?

159 A. A trained man, yes.

Q. He can predict it in a paper run?

A. A certain way, yes, there will or there will not be slime, due to his knowledge of the condition of a mill.

Q. But the intimate knowledge of the condition of the mill would be required to determine that?

A. Yes.

Q. What determines the rate of accumulation of slime?

A. The type of pulp going through the system, the temperature of the water or pulp, due to the time of year, sometimes low bacteria is maintained and some times higher bacteria.

Q. Those factors are variable, from mill to mill?

A. Yes, sir.

Q. Are they variable in every mill?

A. They are variable at any mill.

Q. How is the sanitary problem of slime accumulation attacked?

A. The first step is to eradicate all existing forms of slime and through a physical process of hosing out and by brushing, by scraping or sluicing and after the slime has been eradicated as far as possible by physical means,

chlorinated water is introduced or some germicide which will kill the organisms remaining.

160 Q. You can save my going back by saying what other germicides you have in mind right there.

A. Chlorine or other forms—chlorine in the form of chlorine gas or in the form of chlorarine.

Q. Chlorarine is what?

A. Is chlorine, but used with ammonia. Ammonia is introduced first and then chlorine. Copper sulphate is another. That has restricted uses. I think perhaps those examples would be sufficient. There are some others but I would rather not mention them unless the Master insists that I mention more germicides.

The Master: Only answer the question.

Mr. Schaefer: I don't want to embarrass the witness but we all want to find out all the facts. All that I want are all those that are in common use.

A. Those are in common use.

Q. I am not concerned with anything in the experimental stage.

A. Chlorarine and copper sulphate.

Q. Further work is being done to develop more effective germicides?

A. Not to effect more effective germicides but to develop other germicides which might serve special cases, that is better than the present ones.

Q. Is it possible to have an accumulation of slime 161 in a storage vat in a mill?

A. Yes, a storage tank or chest.

Q. What is the storage tank?

A. A storage tank or chest is a tank for the storage of white water or pulp until it is used.

Q. When chlorine is introduced in a storage tank will the chlorine remain there and remain effective for a long time?

A. It wouldn't, no. It is not so used generally.

Q. How would you attack the slime problem there?

A. I should attack the slime problem by dumping that tank, cleaning it out and seeing to it that the raw water supply was well chlorinated because that is a contributing factor and if there was a persistent factor I should say I would use chloramine instead of chlorine at that particular point.

Q. As I get it, Doctor, the problem occurs at various points in the paper mill?

A. Yes.

Q. As the method of solving the problem may differ from one point to another?

A. That is true.

Q. And the means appropriate at one point may not be appropriate or most effective at another point?

162 A. That is true.

Q. We have mentioned white water in connection with sanitary problems in paper mills. What is white water?

A. White water is re-used water, it has been through the process once and is re-used.

Q. Is that a common paper mill practice?

A. It is.

Q. Will you describe the nature of the sanitary problem created by the use of white water?

A. Micro-biologically the re-used white water carries back to the process a considerable number of micro-organisms which are present by virtue of the fact it has been through the process once and has picked up slime and organisms in that way. Where the white water is re-used I advise chemical treatment, to avoid introducing other contamination into the system over that source.

Q. What chemical treatment do you advise, Doctor?

A. I advise chloramine treatment.

Q. Where do you put the chloramine into the system?

A. I put the ammonia in just ahead of the storage tank and that ammonia would only be for a short time, not over a half hour; that would go in; the ammonia would go in directly in the pipeline, directly after the tank 163 and then the chlorine would be introduced further along, say six feet.

Q. Will the use of chlorine or chloramine prevent slime formation?

A. The use of chlorine or chloramine will prevent the formation of slime caused by bacteria. The reason I mentioned copper sulphate a while ago is that we sometimes use copper sulphate because it is most effective against certain fungi.

Q. There are others that are not vulnerable to attack by chlorine or chloramine?

A. That is true.

Q. What is the function of a callender stack of a paper mill?

A. A callender stack of a paper mill, for an ironing function.

Q. That is the function you mentioned?

A. By sprinkling of water, running it over with a hot iron, it makes a gloss and a polish operation.

Q. Where along the line of paper production does that operation take place?

A. That is the final stage in the paper making operation just before the paper is reeled.

Q. Immediately before the paper is reeled?

A. Yes, sir.

Q. That is the term, reeling it on the spindle?

164 A. Yes, sir.

Q. Is there any heat applied to the paper stock after it passes the callender stacks?

A. No.

Q. Is white water ever used in the callender stacks of a paper mill?

A. It may be used in some cases, I presume. My only knowledge concerns mills I have been in, and they don't use white water in callender stacks. Fresh water is the only kind of water in my experience that is used in the callender stacks.

Q. That fresh water would be the ordinary water supply of the mill?

A. That is the water supply that has been filtered or otherwise treated.

Q. Always in your experience the water at the callender stacks—

A. Is fresh water.

Q. Is fresh water?

A. Yes.

Q. Has it always been chemically treated or filtered?

A. In cases.

Q. Just answer that one question.

A. I was trying to think. I have operated in a hundred mills since I first started. It may not need chemical treatment. The city water supply is often used, not for the
165 reason that we treat water in a paper mill, so the chlorination would not be that severe, if it is city water—just to that extent.

Q. Assuming it is not city water?

A. That is the normal supply of the mill is entirely satisfactory from a sanitary standpoint.

Q. Does slime ever accumulate in the water boxes under the callender stacks?

A. There is a slight gelatinous development, I wouldn't call it a typical slime development.

Q. How frequently do the water boxes at the callender stacks need to be treated in order to prevent that accumulation, or can you state that?

A. I would like to differentiate at this point between the boards. At the callender stack the situation varies between those two classes of mills.

Q. I imagine you will have to build up to that, Doctor. Do bacteria and molds grow well in paper stock?

A. They do in ground wet stock which is mechanically ground, stock made by holding the wood against a grindstone.

Q. Yes.

A. That is the material that is very rich in nutrient because it contains all the food materials the tree contains, the sugar, the cellulose, and so forth.

166 Q. Describe the usual grinding?

A. There is the grinding of wood and there is the chemical process mentioned where it is all done by chemical digestion. The chemical pulp is not as fine food, it is not as satisfactory food for micro-organisms as the green wood. There are certain types of fungi that do grow well on chemical pulp but it is not in itself a satisfactory media.

Q. Certain types of what?

A. Fungi.

Q. Suppose that is trailing the concentration in a paper mill, Doctor, toxic bacteria slides were used, would it be possible to determine whether or not they had been used, in the inspection of finished paper products?

A. It would be possible to detect.

Q. What sort of inspection would require to make that differentiation?

A. Chemical analysis would determine the presence of certain toxic materials used in excess.

Q. Short of chemical analysis?

A. You have a wide range of materials, some of which might be detected by appearance or by odor.

Q. By what?

A. By appearance or by odor, but in a general way, 167 the way to answer your question is the chemical analysis is the only reliable method of detecting the presence of a harmful germicide.

The Master: I would like to ask the witness a question:

Q. Is the paraffin more thickly spread on the inside or on the outside of this container?

A. It should be uniform. If there is any difference there is more on the outside.

Q. Friction would remove some of the paraffin, would it not, that is, the friction of this container against other containers?

A. There is a possibility that under certain conditions of chipping or loosening.

Q. If these were kept in an ice box or a container along with a great many other cartons of this sort, wouldn't some of the water get into the pores of this carton?

A. From the outside?

Q. From the outside.

A. I have conducted no experiments on that. In my opinion, no.

Q. Ordinarily as I recall, the milkman has a container with ice in it and the bottles are resting in ice water.

A. Yes.

168 Q. And if he were to put a number of these cartons in a container of that sort I was just wondering whether the water and the friction would not rub off some of the paraffin and the water might go through.

A. These papers are impregnated, it is only a matter of surface coating, but the paraffin is put on very thin in layers, and there are from five to seven layers on these paper containers, so the whole thing is impregnated, so that the inner layer would still be moisture proof and no ice is used, it is not necessary to use ice in distributing milk in these paper containers because of the finer insulation, the milk stays cold longer.

Q. Doesn't some of the paraffin come off just from handling the container?

A. It is possible that you might work a piece loose.

Q. Not a piece, but some little bit, I notice.

A. Yes, an oily feeling.

Q. Yes.

A. Because of a certain amount of oil and it does give an oily feeling just like mineral oil.

Q. Do you think customers might have hesitation about using milk when they see the paraffin coming off?

A. I have not had any indication at all that there
169 has been any complaint about that. Of course, mineral oil is used so much internally, medicinally, and that comes from the same source.

Q. Do you regard that container as being sufficiently strong to withstand considerable pressure from the top?

A. Yes, I do. I have conducted no strength test by any approved apparatus but I have subjected it to a good many tests and I am surprised at its rigidity and strength.

Q. How does it happen that you have been so active in this particular subject?

A. I was requested to investigate.

Q. What?

A. I was requested to investigate this subject under an investigation authorized by the Department of Health of New York City and of New York State, and the paper container entered New York and received consumer approval and the state health department wanted information on that type of container and they turned to Dr. Breed, who is head of the department and Dr. Breed turned to me for the necessary information and he requested me to go to Geneva, to the laboratory to take charge of this investigation.

Q. What accounts for your continued interest in this subject?

A. As the investigation proceeds, many ramifications have developed and it is not as simple a problem as 170 has been brought out here.

Q. To get down to the subject I have in mind, you were asked by Mr. Garipey whether you were being paid for coming in here?

A. Yes.

Q. I was trying to ascertain just what it meant. Somebody is paying for your time now?

A. I am employed by Cornell University and through Dr. Breed the necessary travel expenses and necessary invoices are sent directly to the treasurer of Cornell University covering expenses. I assume that the expenses of my trip here will be paid some way or other.

Q. I hope so. I was just wondering whether there was some connection between you; I just wanted to get it negative in the record if that is a fact that you had no connection whatever with any paper mill organization or with anybody else that might be interested financially in getting these containers adopted anywhere.

A. The only connection I have is that container manufacturers are interested of course in research, they are interested in all industrial plants these days, they are inter-

ested in research and it is part of the industrial program, being interested in research. The manufacturers of paper containers have started a fund at Cornell University 171 for research to be conducted under the direction of Dr. Breed. It is not being done for any one manufacturer because in view of the fact we are working in the interest of the consumer, all of these containers a consumer might find at the store should be included, and we have encouraged all manufacturers who are producing containers for food, if interested in higher standards, and of course they are, to participate in an investigation.

Q. How have you been able to open this container?

A. This is a shield that protects the pouring lip.

Q. You don't tear the top of it off?

A. No. May I open this?

Mr. Rall: Don't open that one. That is in evidence. We will bring some over tomorrow.

The Master: Q. You open that flap?

A. Yes.

Mr. Rall: Tear it all the way, now, that you have torn it.

The Master: Do you have to be an expert to open that?

The Witness: No, sir. That is an exhibit, Master.

The Master: Is there anything more for today?

Mr. Gariepy: While the Master has asked the witness these pertinent questions which apparently will reflect upon his credibility, I should follow that up.

172 The Master: Yes.

Mr. Gariepy: Q. Do you have any agreement with the Fieldcrest Dairies, plaintiff, or with anybody in connection with the plaintiff, concerning your testimony here today and compensation therefor?

A. None whatsoever.

Q. Have you had any conversation with me or anybody for and on behalf of the plaintiff concerning your services here today?

A. No, sir.

Q. Have you any interest in this litigation with regard to the outcome, favorable or unfavorable or with the City, with regard to money or otherwise?

A. No, sir.

Q. You are here for and on behalf of the consumer?

A. That is true.

Q. Your experience and your research work are for and on behalf of the consumer?

A. Yes, sir.

Q. And the New York experimental station in Geneva?

A. Yes, sir.

Q. You are giving this your time without any build-up concerning pay?

A. Yes.

Mr. Schaefer: You are not being paid by the city of Chicago, are you?

173 A. No, sir.

Q. The situation is this, Doctor, that the milk container people contribute to a research fund at Cornell University and from that your salary is paid?

A. That is right.

Q. And your activities are—

Mr. Gariepy: If the City of Chicago wants you to testify in this matter and asks you, you will be glad to come here and testify?

The Witness: I will be very glad to come here and testify.

Mr. Schaefer: Q. Is the Ex-Cell-O Corporation a contributor to your fund?

A. Yes.

Q. Along with others?

A. Along with others, yes, one of the contributors. May I answer your question, you mentioned pulp and paper mills. I am not employed by any pulp and paper mills and I have no connection with any pulp and paper mills, and when I go to visit paper and pulp mills I receive my expenses, that is, my traveling expenses.

The Master: Q. You said you operated a hundred mills.

A. I used to but of course I worked for the International Paper Company and that was before I was employed
174 by Cornell University and the International Paper Company have many mills from Newfoundland to Bastrop, Louisiana, and it amounted to a good many trips to mills.

Mr. Gariepy: Mr. Schaefer, how long will you take with this man tomorrow?

Mr. Schaefer: I think we will have a pretty full session. I think we can wind up in the morning but I am not sure.

(Discussion off the record.)

The Master: Further cross-examination of this witness will be resumed at 10 o'clock tomorrow morning.

(Thereupon the further hearing in the within cause was continued until 10 o'clock a. m., June 1, 1939.)

176 • • (Caption—) • •

Thursday, June 1, 1939.
10 o'clock a. m.

Met, pursuant to adjournment.

Present:

Frederick A. Gariepy,
Owen Rall, of counsel, on behalf of plaintiff;
Barnett Hodes, Corporation Counsel,
City of Chicago, by Walter V. Schaefer and Charles
P. Horan, Assistants Corporation Counsel, on be-
half of defendants.

177 The Master: You may proceed.

Mr. Schaefer: If the Master please, on the question of the relevancy of certain testimony, as to the use in other municipalities, which came up yesterday, we submitted briefs to Judge Sullivan in the two cases before him with regard to the relevancy of some allegations in the pleadings, and I thought if those would be helpful to you we would be glad to give them to you.

The Master: I would be glad to look at them.

Mr. Schaefer: Briefs were submitted on behalf of the Ex-Cell-O Corporation and the American Can Company.

The Master: Judge Sullivan did not decide that?

Mr. Schaefer: There has been no ruling yet, but I thought that that might be helpful. But they do discuss other questions there which are not pertinent here.

The Master: I will be glad to get that.

Mr. Gariepy: In view of the fact I was not a party to those motions to strike or in that litigation, I will be glad to answer his briefs on that point that he is going to give the Master.

The Master: Yes.

Mr. Schaefer: Off the record.

(Discussion had off the record.)

178 Mr. Schaefer: Now, one other matter before we begin. There have been reserved rulings on two questions. First, the relevancy of the testimony as to the use of paper containers in other municipalities, and, second, as to the relevancy of counts, bacterial counts, and the condition of the glass bottle in other municipalities.

The Master: Relevancy of what? Counts?

Mr. Schaefer: Yes, counts. The witness testified as to the results of certain tests he made with respect to glass bottles in municipalities other than the City of Chicago. I am a little embarrassed here this morning, because I may touch on both of those points, and if the ruling be in favor of the admissibility I would want to cross-examine. If the ruling is against the admissibility, I am willing to let it stop.

The Master: I am at a little disadvantage here. In the first place, we are hearing depositions here, in which event I have no very great discretion in the disposition of objections, that is, I have to let everything go in, and, then, irrespective of the fact that we are taking depositions, the Master always tries, or should try to make the record be in such shape that if the Court should disagree with him he will not have to send the case back for the further taking of testimony. Of course, if a particular line of testimony will unduly encumber the record, the Master may decide the question and eliminate all of that testimony, so that the record shall not be so encumbered, but thus far I have not seen any very great amount of testimony on these debatable subjects, so I have let them go in. I have made certain observations and rulings, at the same time permitting the evidence to come in the record for whatever use the Court may wish to make of it.

Now, on those bottles and containers, I just thought it would be all right to take the testimony and then go ahead with the cross-examination, without prejudice to your objection:

Mr. Schaefer: All right.

Mr. Garipey: I was going to suggest that we will stipulate that he may do that, without prejudice.

The Master: Yes. Now, as to that other question you raised yesterday morning, with reference to this joint experiment proposition, I was just wondering whether you were going to insist on that, in view of the opposition of the other party. It seems to me that the purpose of the whole arrangement was to save some time, if possible, and the basis for the whole thing was a voluntary agreement of both sides in an endeavor to save time and expense.

Mr. Schaefer: Yes, and to answer certain questions.

The Master: Now, they say, after consultation with their experts, they have decided that it would take a whole lot

longer than they originally contemplated and that they have the results of experiments which, according to them, were conducted under circumstances and conditions closely approximating those which may be found in a dairy, and they say also if there are any differences they can be brought out on cross-examination, and the differences may go to the weight of the testimony or their evidence of the experiments.

I was wondering whether, in view of their opposition at this time, if you are going to insist very strongly on carrying out the agreement. It seems to me the whole thing was done originally by agreement in order to save time. Now one side says the procedure outlined, according to his views, will not effect the purpose and achieve the end that was in contemplation. Then the thing to do, perhaps, is to
181 just forget about it, particularly in view of the fact that you did not have any very conclusive effect attached to the experiments, that both sides were to be at full liberty to cross-examine to their heart's content.

Mr. Schaefer: Of course, realistically the effect of those experiments would be pretty important, it seems to me. That is, if the results of these experiments are in favor of the container, while we do not stipulate that it would affect the results of the lawsuit, I am under no illusions but that it would.

In the second place, we did this by agreement, at the suggestion of counsel for plaintiff. My original effort was to secure an order, the entry of an order, at a pre-trial conference, which would direct that these experiments be performed, and when I suggested the second time that that be done Mr. Gariepy said that he thought we could work that out by agreement, which seemed perfectly rational to me.

So we proceeded that way, instead of appearing before Judge Woodward, at a pre-trial conference, which was my original thought. Then I have been instructed, rather emphatically, by the Board of Health, who are defendants
182 in both of these cases, to attempt to have these tests performed in this manner. I was not impressed by any of the arguments—and I tried to look at it objectively, too—I was not impressed by any of the arguments against the conduct of these experiments. One thing was suggested, the substitution of other bacteria, and we are perfectly agreeable to that. That is a matter that can be readily

worked out. As to the time element, we just disagree with that.

The Master: What is that?

Mr. Schaefer: We disagree violently with the suggestion as to the amount of time necessary to conduct the experiments.

Mr. Rall: If the Master please, I understand some reference will be made to the procedures that the city has requested for these tests in the redirect examination of this witness, and it would be my suggestion that after the testimony has been concluded counsel and an expert on each side confer with your Honor. Certainly we want the city to have every opportunity, and if it can be done without a duplication of too much expense and without too much delay, we want to give the city anything that it wants within reason.

183 I am not at all sure—I was not in the city at the time of the conference last Monday, which broke up—I am not at all sure that an agreement cannot be reached. You understand that Mr. Gariepy did not get his objections to these procedures out of thin air. It was not at all a matter for the lawyers to decide. He submitted them to the experts, who were to make the tests, and they simply said that it was useless, and they would not be a party to it, and to that extent Mr. Gariepy's hands were tied. But Professor Tanner of the University of Illinois is here. He is an associate of Dr. Prucha, who is one of the men named, and I think he has some ideas on it, and after the testimony I suggest such a conference.

The Master: We can take that up later.

Mr. Schaefer: How about this as a suggestion; that we get the men who were to perform the tests, get Prucha, get Day and get Bailey, and let them sit down with you? Counsel do not need to be present. Let them work it out with you.

The Master: We can take that up later. Let us get through with this witness.

184 JOHN RAYMOND SANBORN, a witness on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Cross-Examination by Mr. Schaefer (Continued).

Q. Doctor, in order adequately to determine the sanitary qualities of paper board used in paper containers for milk, how many samples per ton of paper do you think should be taken and disintegrated and examined bacteriologically?

A. A suitable sample should be taken from each run, each mill run of that paper board.

Q. What do you mean by each mill run, Doctor?

A. A suitable sample from each production period.

Q. How long is a production period?

A. It varies in length of time.

Q. Will you explain that? I do not understand what you mean, Doctor.

A. The run of a product by a mill depends upon the size of its order.

Q. The size of its order?

A. The size of the order that was given.

Q. What you mean, then, is that these mills that produce board for paper containers also produce paper 185 for other uses?

A. Yes.

Q. Is that right?

A. Yes.

Q. And the amount of time that they devote to producing paper or board for paper containers and to producing paper for other purposes varies with the demand for the various products that they produce?

A. Yes.

Q. Now, a run may last how long?

A. A run may last a few hours or it may last all day.

Q. May it last more than a day?

A. A run of paper, generally speaking, may last several days.

Q. Of a particular type?

A. Yes. The average time is about a day.

Q. That is, sometimes it is more than a day and sometimes it is a matter of a few hours, and it may run up to several days?

A. Yes.

Q. You do not believe, then, that the number of samples that should be taken should depend upon the quantity of paper?

A. Yes, it should depend upon the quantity of paper. I mentioned suitable sample or suitable samples.

Q. I thought you said one sample from each run.

186 A. One suitable sample.

Q. What do you mean by a suitable sample?

A. A sample that would be representative of the run.

Q. What would that be in physical terms? Describe such a sample.

A. If it was a short run of paper board, it is possible that a single sample would be adequate. On the other hand, it might be necessary to have three or more samples, depending upon local conditions.

Q. How many samples per ton should there be, in your opinion, Doctor?

A. That matter is usually determined by the length of the run. Under average conditions and in an average length of time, three samples are submitted, one at the early part of the run, one at the middle of the run and one at the end of the run.

Q. That is regardless of the amount of paper produced in volume?

A. Yes.

Q. Is that proper, in your opinion?

A. Yes, that is getting representative and satisfactory results.

Q. That is, in your opinion the number of samples should not bear a direct relation to the volume of paper produced by the mill?

A. It may not bear a direct relation.

187 Q. No, I want your opinion, as to whether or not it should.

A. Yes.

Mr. Schaefer: Will you read the question again, please, Mr. Reporter?

(Mr. Schaefer's question was read by the reporter as above recorded.)

Mr. Schaefer: Q. You mean the number of samples should bear a direct relation to the quantity of paper produced?

A. You ask for a definite answer, under all conditions possible, and the question cannot be answered as no.

Q. I want your opinion as an expert, Doctor. You know more about this than the rest of us do.

A. Well, in my experience I have found that it is adequate to ignore the size of the run or the quantity of paper, but I can see in a general way that it might be necessary to take that fact into consideration, so that the answer must be yes.

Q. Will you explain what you mean when you say that you can see in a general way why that would be necessary, Doctor?

A. The answer to that question involves a knowledge of mill policies and mill operation, and an intimate knowledge of such facts, which are not usually available to the layman, would determine the need for the recognition of that factor.

Q. That is, when you say that samples which are not based on the quantity of paper produced are adequate, you mean in view of your knowledge of conditions and your frequent inspection of these mills and so on?

A. Yes.

Q. From a sanitary or public health point of view, would you think it advisable to rely alone upon board disintegration tests as determining the sanitary quality of the paper board?

A. Board disintegration tests can be an index to the sanitary condition of manufacture of the mill.

Q. Yes, I can see that, but what I am asking is whether you believe that that index alone may safely be relied upon.

A. In the case of the board in question?

Q. No, in the case of paper board generally.

Mr. Gariepy: I am going to object here.

The Master: Read that question.

(The record was read as above recorded.)

Mr. Gariepy: That is where my objection comes in. We are going far afield in regard to board generally. We are only trying the board in question here, the Pure-Pak container board, from prime pulp. It may be all right for counsel to obtain all the information that he can from the Doctor as a matter of procedure, but I don't think we should take the time up here with general topics.

The Master: I will overrule the objection. He may answer.

The Witness: A. No.

Mr. Schaefer: Now, the question was what?

The Master: Read the question.

(The record was again read as above recorded.)

Mr. Schaefer: Q. Now, how is it possible to know what products a paper mill is producing at a given time, without observing the operation of the mill?

Mr. Gariepy: I make the same objection, Master. It should apply to the mill in question, the Cherry River, and not any other mill.

The Master: You can ask him those questions on redirect, as to the difference between this mill and any other mill.

Mr. Schaefer: This question I am perfectly willing to have confined to the Cherry River mill.

The Master: Read the question to the witness, please.

190 (The question was read as above recorded.)

The Witness: A. It is impossible to know that without having a knowledge of the mill schedule of runs.

Mr. Schaefer: Q. Whether or not the mill complies with that schedule? By schedule you mean what the mill has produced?

A. Yes.

Q. You do not mean a projected schedule in the future?

A. No. A schedule for the immediate future, what it proposes to make during the next few days.

Q. If you project the schedule into the future, it is necessary to know not only the schedule, but also to know that that schedule is being conformed to, is it not?

A. Yes.

Q. How many paper mills have bacteriological laboratories?

Mr. Gariepy: I object to that, Master, for the same reason as before given.

The Master: Your objection may stand to all this line of examination as to other mills and as to questions which are broad enough to include other mills, without being
191 repeated.

Mr. Gariepy: All right.

The Master: Answer the question.

The Witness: A. Here, again, you want to include all mills that I know of?

Mr. Schaefer: Q. All mills that you know of. You have

a pretty broad knowledge of them, don't you, in the north-eastern part of the country, any way?

A. I can answer that question in a general way, as far as my knowledge goes.

Q. Yes.

A. I know fourteen mills that have some sort of bacteriological control in the mill laboratory.

Q. Are those fully equipped bacteriological laboratories, do you think?

A. They are not all fully equipped bacteriological laboratories.

Q. How many of the mills that manufacture board for paper milk containers manufacture that product exclusively?

A. I know of no mill that manufactures that product exclusively.

Q. Is it not more expensive for a mill to produce paper of a high sanitary quality than to produce paper of a low sanitary quality?

Mr. Gariepy: I don't see any materiality to that, Master. We are just wasting time and money here.

192 The Master: He is dealing here with the general proposition, not particularly with this particular manufacturer's container, but he is dealing with an ordinance, and he has to consider the broad aspect of this situation, as to whether somebody else may come in with a container of this sort, whether the ordinance should be held to apply to everybody who manufactures containers. I think he is entitled to ask these questions, if for no other reason than to ascertain the knowledge of the witness on the general subject of paper making.

Mr. Gariepy: But whether it is profitable or unprofitable for them to make this paper of the better grade I do not think is material, especially with respect to this ordinance, or any other ordinance.

The Master: Well, whether it will give them a chance to escape some of these requirements of sanitation, whether particular paper mills might be permitted to go ahead and give you an inferior grade, because it would be economical for them to do it—I will agree with you it may not be very material here, but it is just part of the general subject. I will let him answer.

The Witness: May I have the question again?
(The question was read as above recorded.)

193 The Witness: A. In my opinion, it is not more expensive to produce a paper of high sanitary quality.

Mr. Schaefer: Q. Is it more expensive to use virgin stock than to use secondary stock?

A. It is more expensive to use prime pulp.

Q. Can bactericide be applied to the water supply of a mill without expense?

A. No.

Q. Can the operation you described of cleaning a mill system to eliminate accumulations of slime be performed without expense?

A. No.

Q. Is the maintenance of a bacteriological laboratory a factor of importance in the sanitary quality of the output of a mill?

A. May I have that question again?

(Mr. Schaefer's last question was read by the reporter as above recorded.)

Mr. Schaefer: Q. Strike out the words "of importance" and just say "factor."

A. Yes.

Q. Can such a laboratory be maintained without expense?

A. No.

Q. Is copper pipe in a mill plant conducive to the production of high quality paper, from a sanitary point of view, than is the use of iron pipe?

194 A. It is a factor that is conducive to better sanitation.

Q. Is copper pipe more expensive than iron pipe?

A. Yes.

Q. Now, will you explain what you meant, Doctor, when you said that it was not more expensive for a paper mill to produce a paper of a high sanitary standard than a paper of a low sanitary standard?

Mr. Gariepy: I don't see any materiality to that, Master. He is just going on ad infinitum, it seems to me, into these ramifications.

The Master: I have already ruled on that.

The Witness: A. The reason for my answer is that these precautions have been utilized for many years without any direct sanitary objective. They have been used for—

Mr. Schaefer: Q. Any direct what, Doctor?

A. Sanitary objective.

Q. Sanitary objective?

A. They were used for economic reasons. A mill cannot operate economically without utilizing bactericidal control. That is part of the mill operation system. That expense has been borne through the years as a necessary prerequisite for continuing satisfactory production.

195 Q. Now, Doctor, I want to call your attention to a statement which, according to this publication, was published by the New York Agricultural Experiment Station at Geneva, New York, and reprinted from the January, 1938, issue of the Journal of Milk Technology. This statement appears:

"Fear of increased operative costs and hesitancy to make changes in the long established practices intensify the opposition to improved sanitary methods on the part of some pulp and paper mills."

Was that a sound statement at the time it was made, Doctor?

A. Yes.

Q. Is it a sound statement now?

A. Yes. Master, I had not quite finished my answer to the previous question.

Q. Go ahead, Doctor.

A. It would have dealt with this particular matter.

Q. Go ahead.

A. I have said that micro-biological control has been an economic necessity through the years, not for sanitary reasons, but for operative reasons. Naturally, some mills recognize this fact much more readily and much more
196 completely than others. Some mills may even refuse to recognize it until forced to, because of a sudden cessation of activities, through no planning or wish of their own. So there has been and are a number of mills—and of course there are hundreds in the country—that are trying to get along—and I am speaking now generally of all mills—without microbiological control. They learn, to their sorrow, eventually and periodically, that they must stop their activities and stop their present procedures and adopt some sort of sanitary program. But there are many mills, to my knowledge, that have adopted such a sanitary program for continuous use.

For economic reasons, all mills should adopt micro-biological control, not necessarily for sanitary reasons. So when we come to the board to be used or the paper products to be used, for food uses, medical uses or other uses, they

can achieve, without extra cost, sanitary benefits, as well as economic benefits, by following such suggestions, for example, as I might make, which would involve merely a slight change in the method of application, without meaning the purpose of any new equipment or new material.

Q. Doctor, is not what you are saying merely this: 197 That the amount of increased cost and whether or not there is any increased cost depends upon the condition of the mill at the time you start considering whether or not the cost is increased?

A. Yes.

Q. Now, Doctor, is there anything which would prevent mills not presently making paper board for milk containers from manufacturing paper board for that purpose?

A. Yes.

Q. And what would prevent that?

A. There are many factors that may prevent a mill from producing that grade of paper board. It is difficult to enumerate all of them.

Q. Will you enumerate the most important ones?

A. The location of the mill.

Q. Now, let us take them one by one. How will the location of the mill make it impossible for a paper mill to produce paper board for milk containers?

A. It would have to be near a source of supply of raw materials and a suitable water supply.

Q. Most mills are near a source of supply of raw materials, are they not?

A. That picture is changing very rapidly. They originally were.

198. Q. Whether or not they are near a source of raw material supply influences the cost to them of producing the product, doesn't it?

A. There is one other factor. Their ability—

Q. Well, wait, Doctor. Let us finish that first one. Those are the only influences, aren't they?

A. Not the only influences.

Q. What others?

A. Their ability to obtain raw material of suitable sanitary condition.

Q. Now, wait. You are introducing a factor that I have not introduced, suitable sanitary condition.

A. Now, may I have the question again, please?

Q. Let me ask the question again. Is there anything to prevent mills not presently making paper board for milk

containers from manufacturing paper board for that purpose?

Mr. Garipey: Master, how is that germane to the subject matter of inquiry here? Are not we going into a realm of speculation as to what those mills may do or may not do?

The Master: He may be using this as a preface to an attack on your particular mill, trying to find out what the general situation is, and then to see whether that general situation obtains at your mill.

Mr. Garipey: I don't want to be obstreperous here 199 by objecting unnecessarily, but it seems that we are going far afield from this paper board question.

The Master: I think on cross-examination he is allowed a certain liberality. Go ahead. Have you the question?

The Witness: No.

The Master: Read the question.

(Mr. Schaefer's last question was read by the reporter as above recorded.)

The Witness: A. Yes.

Mr. Schaefer: Q. All right, now, you have mentioned one thing, and that was the location of the mill with respect to its supply of raw materials, and that influences the cost, but does not physically prevent the mill from manufacturing paper containers, is that right?

A. It influences the cost, yes.

Q. And at an increased cost, assuming that it has an unfavorable economic location, a mill could have raw materials?

A. Yes.

Q. Now, what are the other factors?

A. The nature of the mill itself.

Q. What do you mean by that?

A. I mean its equipment and type of—

200 Q. Now, wait. Let us have one thing at a time.

A. They are all linked together.

Q. Let us take the nature of the equipment. What peculiar equipment is required to produce paper board for paper containers that is not required to produce paper board for other uses?

A. Paper board for milk containers—and we are referring now, I believe, to one container, are we not?

Q. No, we are not. We are talking generally now, Doctor. We are talking about paper mills.

A. Paper board for milk containers contains bleached

pulp. A bleaching plant might not and would not be available or part of the equipment of other classes of mills.

Q. Is it your experience that most mills which do not produce paper containers do not have bleaching plants available?

A. Let me have the question again, please.

(The question was read as above recorded.)

The Witness: A. No.

Mr. Schaefer: Q. That is, most mills which are not producing paper containers have bleaching plants available?

A. Might it not help, to sort of classify in a general way mills, so we can limit it a little bit?

Q. Let us enumerate the factors first.

A. For example, I would like to eliminate newsprint paper mills and other mills, such as tissue mills. Tissue mills do not have bleaching plants. So we can save time by limiting the discussion to certain groups of mills or certain classes of mills.

Q. All right. That is fine. Why cannot a tissue mill produce board for paper containers?

A. Because it has a different kind of a machine that is designed for making thin paper, such as tissue, and cannot make a paper board.

Q. Without changing the machinery?

A. Without changing the machinery or changing the mill, yes.

Q. And the same thing is true of mills manufacturing paper newsprint?

A. That is right.

Q. All right, we will eliminate those. Now, will you answer the question with respect to that bleaching equipment, or do you want to change your answer, eliminating those classes of mills?

A. No.

Q. The answer remains, eliminating those two classes of mills?

A. Yes, it remains.

Q. Now, what other factors, Doctor, would prevent a paper mill from manufacturing board?

A. That second one, as I understand it, was equipment and apparatus and machines and all of the devices used.

Q. Now we have enumerated two types of mills whose machinery is unsuited. Are there other types of mills whose machinery is unsuited?

A. There are other types of mills whose machinery is unsuited as they are manufacturing paper at present, and it would mean a new layout. It would mean new and different apparatus.

Q. What kind of new and different apparatus, Doctor?

A. Apparatus for the handling of the pulp, for refining it, for example.

Q. How is it refined different in these mills that you are now referring to from that refined by a mill producing paper board?

A. That is entirely up to the mill system, the policy of the mill. There are many ways to manufacture pulp, and I doubt if there are many paper makers that know all of them or have used all of them. The setups and methods of handling vary widely from mill to (mill) and each mill may have its own pet way of manufacturing pulp and paper.

203 Q. They can all produce paper board by all of these various methods?

A. Yes, it is possible to, provided they have the right kind of machine, which is a special machine for producing that grade of paper.

Q. For producing that grade of paper?

A. Container board.

Q. What do you mean by that? I am not talking about grades of paper, Doctor. I am talking about paper board.

A. Which is one grade of paper, and that is the grade I had reference to. It is made on one kind of paper machine, called a cylinder machine.

Q. I see. Do most of the paper mills, in your experience, have that kind of a machine?

A. In the United States most of the board mills have a cylinder machine.

Q. All right now, what are the other factors which you had in mind, Doctor?

A. One other factor is the business policy of the mill. By that I mean the types of paper manufactured in relation to the demand, the type of business that the mill is designed for. It is designed for a certain type of business. It will not go into any other business for any other kind of
204 paper without perhaps, building another mill somewhere.

Q. Or unless the demand shifts, is that right?

A. It would mean the revamping of the whole setup in any case.

Q. Why?

A. Because the way of handling waste materials, for example, which might go into another class of paper board, is so different from the manner of handling prime stock for milk container board, say, that the change would necessitate a considerable amount of alteration in the physical equipment and procedure.

Q. Let me put it this way: What physical fact is there in the operation of a paper mill that would prevent it from producing a board which is shaped like that board? (Handling instrument to the witness.)

The Master: Referring to exhibit what?

Mr. Schaefer: Referring to Plaintiff's Exhibit 3.

Mr. Gariepy: If the Master please, we have a man here who operates paper mills and knows about the economic factors obtaining in paper mills. The Doctor was put on as a bacteriologist concerning paper and particularly concerning the paper in question here. We obtained him and put him on the stand and questioned him for such purpose 205 and not as a man operating a mill.

The Master: Do you contend that he is unable to answer these questions?

Mr. Gariepy: I contend it is improper cross-examination. We did not ask him about operating paper mills on direct examination, and counsel ought to be confined to the direct. If he wants to ask a man practical questions about the operation of paper mills we will put one on and he can ask him questions for a week. He will tell him about operating mills and converting them and so on. I think the Doctor can take care of himself. I don't care.

Mr. Schaefer:: I think he is qualified.

The Master: Do you consider yourself capable of answering these questions, Dr. Sanborn?

The Witness: Yes.

The Master: Go ahead.

Mr. Schaefer: Will you read my last question?

(Mr. Schaefer's last question was read by the reporter as above recorded.)

The Witness: A. The raw materials available at a mill might not permit it to make a board of this kind.

Mr. Schaefer: Q. A board shaped like that?

Mr. Gariepy: The shape does not enter into it, does it?

206 Mr. Schaefer: The shape is what I asked him about.

Mr. Gariepy: That is a converting mill you are talking about, not a paper mill.

The Master: Let the witness talk about the shape.

The Witness: A. Your question I did not understand. You mean as applied to the shape of this board?

Mr. Schaefer: Q. Yes.

A. Not as to its other physical properties, such as folding, bending and strength?

Q. Yesterday you were shown a roll of paper.

A. Yes.

Q. Do you remember what that was?

A. I remember the roll, yes.

Q. What is there in the physical condition of paper mill plants, generally, which would make it impossible for them to produce a roll of paper similar to that roll?

A. Similar in what way?

Q. Similar in outward appearance.

The Master: Size, color, thickness, tensile strength.

Mr. Schaefer: Tensile strength, no.

The Witness: A. Aside from the economic factors, there might not be anything that would prevent them from making it.

Mr. Schaefer: Q. Now, Doctor, if the use of broke or trim was prohibited in the making of board for paper 207 containers and the use of lap stock only was permitted, would the cost of producing the paper board be increased?

A. Not appreciably.

Q. It would be increased?

A. It would be very hard to measure any increase. It might be infinitesimal in amount. There might be a little economic loss, but it would be very hard to measure it in dollars and cents. In fact, there might be no economic loss in the long run.

Q. You mean they might use the broke and trim in some other kind of manufacture?

A. They might use the broke and trim in some other kind of manufacture, that might be sold to other outside mills.

Q. But if the broke or trim were not used at all, it would substantially increase the cost?

A. No, not substantially increase the cost.

Q. Even if it were not used at all?

A. No.

Q. Have manufacturers of paper recently shown an

increased interest in the sanitary quality of their product?

A. Yes.

Mr. Gariepy: I object to that, Master. Whether they have or not is immaterial.

208 The Master: I will let him answer.

Mr. Schaefer: Q. When did that increase in interest first begin to manifest itself?

A. In the case of certain mills there has been an interest in that subject from the early history of the mills. In the other cases there has been increased interest since it was known that the public health authorities were interested or that research agencies were interested.

Q. And that increased interest, roughly, coincided with the beginning of your work at the experimental station at Geneva?

A. Yes.

Q. In fact, a manifestation of their interest was the establishment of the foundation at Cornell University, I suppose?

A. Yes.

Q. Are they making progress along the line of increased sanitary products?

A. Yes.

The Master: Is who making progress?

Mr. Schaefer: Q. Are the manufacturers of paper board making progress?

A. Yes.

Q. Is that a continuing progress, would you say?

A. Yes.

209 Q. Do you expect that progress to continue in the future?

A. Yes.

Q. Do you know whether or not any work is being done by manufacturers of paper board looking toward the production of a paper milk container which is capable of being sterilized immediately before it is filled with milk?

Mr. Gariepy: Object to that question, Master. It assumes that the present container is not sterilized before it is filled with milk, and the Doctor has already answered that the containers without the paraffin are considered essentially sterile.

The Master: We will be able to tell from this testimony what he has testified. Read the question.

(Mr. Schaefer's last question was read by the reporter as above recorded.)

The Witness: A. No, to paper board manufacturers. Research work is in progress by manufacturers of containers which might be construed as having that as an objective.

Mr. Schaefer: Q. Will you describe what the work is that you have in mind, Doctor?

A. Being a research work in progress and not under my direction or knowledge, I do not feel competent to discuss it.

210 Q. You do not know what stage that development has reached?

A. No.

Q. Of your own knowledge?

A. No.

Q. In your opinion, in the interest of public health, should standards be formulated and adopted governing the production of paper board for use in paper milk containers and governing also the subsequent processing and handling of that paper board until the container is filled with milk?

Mr. Garipey: I object, Master. It assumes that there are no standards existing at the present time.

The Master: The witness may answer and you can bring it out on redirect. Go ahead.

The Witness: A. Yes.

Mr. Schaefer: Q. By whom should those standards be formulated and adopted, in your opinion, Doctor, be formulated, adopted and enforced?

A. Do you refer to sanitary standards alone?

Q. I am referring to the standards that you think of as standards governing the production.

A. Public health?

Q. From a public health point of view.

A. Based on research work, information is obtained which will enable public health authorities to determine on what they consider satisfactory standards.

211 Q. That is, in your opinion, those standards should be formulated and adopted by public health authorities based upon—

A. Based upon adequate research data.

Q. (Continuing.) —based upon adequate research data, is that right?

A. Yes.

Q. Has the City of New York formulated and adopted such standards?

A. No. New York City has as yet no established regulations, as far as I know.

Q. Has the City of Philadelphia, as far as you know?

A. I know of no standards there.

Q. Your knowledge of New York goes up to what date, Doctor?

A. It goes up to within one week.

Q. And in the City of Philadelphia have such standards been formulated?

A. I have no knowledge of any such standards in Philadelphia.

Q. That appears elsewhere in this record. Now, in what cities have such standards been formulated and adopted?

A. There is a standard for the City of Baltimore.

Q. And what others, Doctor?

A. There is a standard set in the regulations adopted by the City of Reading, Pennsylvania.

Q. When were those adopted, do you know?

212 A. I have them here. I can present them, if you wish to look at them.

Q. You can refer to them, if you see fit. I would like to get that.

213 A. Excuse me just a minute. December 1, 1937, is the date in here on the Reading.

Q. What other cities, Doctor?

Mr. Gariepy: Let him get it. He is getting it.

A. I have the Baltimore regulation and it has been mimeographed. That was February 25, 1937.

Mr. Schaefer: Q. Baltimore, it was adopted February 25, 1937, and the effective date the same date.

Mr. Gariepy: Let the record show the witness is examining a document purporting to be an ordinance.

Mr. Schaefer: No. I am just asking what he knows as to the date.

Mr. Gariepy: Let the record show exactly what is transpiring. He is handing him a printed copy of the mimeographed ordinance and a copy of the Baltimore Health Department Ordinance.

The Master: What is the purpose?

Mr. Gariepy: He is not talking exactly about dates. That is the purpose of it, Master.

The Master: Go ahead.

Mr. Schaefer: Q. Now, what other cities have?

A. I know of no other city that has adopted regulation.

Q. Have you made an effort to ascertain regulation?

A. Yes.

Q. In your opinion, are the Baltimore regulations 214 satisfactory?

A. No.

Q. In your opinion, are the Reading regulations satisfactory? If you want to look at this Reading ordinance, maybe this will help you.

A. No, I don't care to look at it. It is all right, unless I have to tell why.

Q. I am not going to ask you why.

A. Yes.

Q. Was the Reading regulation satisfactory, in your opinion?

A. Barring minor differences of opinion, concerning the importance of certain factors, the Reading regulations are generally satisfactory as they stand.

Q. Go ahead, Doctor. This is an explanation that I think is important. I don't want to embarrass you, Doctor, by asking you why in your opinion they are not satisfactory. I don't think it is particularly material why you think so.

A. No.

Q. But I want to know whether you think they are satisfactory now. You have said that the Baltimore regulations were not, in your opinion.

A. Yes.

Q. And the Reading were.

A. Yes.

215 Q. And I have in mind a particular factor here which you probably also have in mind which is the same in both regulations. Let me ask you the question again: In your opinion, are the regulations adopted by the City of Reading—

A. Reading, yes.

Q. —satisfactory.

A. Might I look at it now, please?

Q. Yes. (Handing document to the witness.)

A. There is probably a difference of opinion as to the definition of the word satisfactory, and as I gather it the definition in counsel's mind, I would say, the answer should be no.

Q. That is, in your opinion these regulations are not satisfactory?

A. Not entirely satisfactory.

Q. And those are the only two cities that you know of that have formulated and adopted regulations?

A. Yes, sir.

Q. Doctor, you testified with respect to certain bacteriological counts which you made on glass bottles, you testified to that yesterday. Were those made on Chicago bottles?

A. No.

Q. Will you describe those tests, please, Doctor?
216 First, when were they made?

A. I can best answer that question by stating that in the experience of a trained food bacteriologist, it becomes his interest and his duty to keep in close touch with the sanitary condition of containers including glass bottles and that periodically he examines them and reviews the literature and all available data so that he is well informed on the trend of investigations and the condition of counts from year to year.

Q. Yes, I can see that, Doctor. Now, when did you make your last periodical count on glass bottles?

A. An examination was made of glass bottles in 1938.

Q. By you?

A. Under my direction, yes.

Q. By whom?

A. In my laboratory.

Q. By whom?

A. It was probably done partly by myself and partly by my assistants.

Q. Will you describe the analysis that you made of that.

A. The only analysis made at that time was the rinse test.

Q. All right. Will you describe how you conducted that rinse test.

A. The rinse test is performed according to the standard methods, the latest standard methods of the American Public Health Association, employing a rinse with
217 ten cubic centimeters of sterile water and plating out according to bacteriological content.

Q. Shaking the bottle?

A. According to standard methods, and a plating by bacteriological content or methods in the preparation for

this experiment, sterile bottle caps are used in conveying and preparing the bottle for transportation to the laboratory in case it is done at the laboratory at a distance from the dairy.

Q. How many bottles did you test by that method at that last test?

A. The number of bottles rinsed is not clear to me now because of the lapse of time.

Q. More than a hundred?

A. No.

Q. More than ten? I just want your best recollection, Doctor.

A. I was trying to recollect the exact number, but I am not sure. It may have been between 20 and 30.

Q. Now, how were those bottles treated before they came to you for inspection, before they left the dairy?

A. They had gone through the usual process of soaking and washing and chlorine treatment.

Q. Where did the bottles come from?

A. They were bottles directly from the dairy going through the usual process.

218 Q. What dairy?

A. I prefer not to answer concerning the identity of milk plants because I don't wish to astigmatize any particular milk plant, Master, and in the same way I would not like to specify any mill other than the one I have already mentioned.

Q. Do you regard these particular bottles bacteriologically defective so that as to the ordinance—that the dairy would be astigmatized?

A. No.

Q. Then no stigma will attach, will there?

Mr. Rall: Couldn't he give the location of it, I mean the town or something like that?

The Witness: By stigmatize, I didn't mean in any specific sense except that possible interpretation that any layman might put upon any evidence in connection with the analysis.

Mr. Schaefer: Q. All right, Doctor. In what town, if any, was that dairy located?

A. In Geneva, New York.

Q. Subject to the inspection of the health authorities of Geneva, New York?

A. Subject to, you mean—under their jurisdiction or supervision, officially?

Q. That's right.

A. Not in connection with an official supervision, although I believe there was an inspector present, but 219 that was not by design, now.

Q. What governmental unit, if any, controls the operations of that dairy from a sanitary standpoint?

A. It operates under the local health ordinance of the city.

Q. That is under the jurisdiction of the health authorities of the City of Geneva, is it?

A. Yes, sir.

Q. Did you see those bottles received and washed in the soaker type washer?

A. No.

Q. Did you see them receive any rinsing?

A. No.

Q. Did you see them receive any chlorine treatment?

A. No.

Q. You don't know whether those things were applied or not, of your own knowledge?

A. I know that is the system. That is the system they go through but I was not present at those various points.

Q. Now, what was the last periodic test before that one, Doctor?

A. Those tests could not be called periodic, because I have never conducted such investigation as is shown as being done by agencies that conduct or initiate any projects and service in that particular field. These 220 tests are inspired in the interest of research and in the interest of attention, if class room work were involved or for personal interest. Previous to that as near as I recall, there had been a lapse of years before regular examination. I recall that yearly, annual tests were run between the years of—

Q. These are tests run by you, Doctor?

A. Yes, 1924 to 1928.

Q. Where were those runs?

A. Those were in Canada.

Q. Did you, Doctor, inspect the treatment that the bottles received in the dairy before you made your examination?

A. No.

Q. Does that state fully your own experience with respect to tests on glass bottles?

A. Yes, so far as the personal experimentation is con-

cerned. In addition to that, of course, we have the result from the literature.

Q. Yes.

A. And they are valuable sources.

Q. I am interested now in your own experience.

A. Yes.

Q. And that is the experience on which you base your statement on direct examination, and I am quoting it
221 now as it appears "My experience is that there is a higher degree of sterility in the paper bottle than in the glass bottle." That is the experience.

A. That is a personal experience, with the addition of the public reports and publications.

Q. But that is your personal experience?

A. Yes.

Q. And in your sterility tests with paper containers,
Doctor, how much broth do you put into the container,
Doctor, and incubate?

A. Ten cubic centimeters.

Q. You did something yesterday that interested me when you were shown a roll of paper, you were asked where that paper came from. You said it came from the Cherry River Paper Mill. How did you determine that?

A. By the printing.

Q. You mean you did not determine—

A. Not by looking at the paper.

Q. Not by looking at the paper?

A. No, sir.

Q. You are not that good.

A. I may be, but I am too modest to admit it.

The Master: We shall take a short recess.

(A recess was taken.)

Mr. Schaefer: Q. Doctor, how many grams of paper are there in the Pure-Pak Paper Container, quart size?

Mr. Gariepy: I can't hear the question, Mr. Schae-
222 fer. Will you speak louder?

The Master: Will you read the question?

(Question read by the reporter.)

A. I cannot answer exactly.

Mr. Schaefer: Q. Have you an approximate idea?

A. I believe the container weighs about 40 grams.

Q. Is that a fair approximation, in your opinion?

A. Yes.

Q. The pint container, how much?

A. I have not weighed a pint container.

Q. Doctor, I want to clear up the purpose of the disintegration tests that you run, paper disintegration tests. There appears in the transcript of yesterday's testimony, page 83, a statement by Mr. Gariepy to the effect that the purpose of the disintegration test is to determine how much absorption there is in the paper. Is that the purpose of those tests?

A. No.

The Master: Mr. Gariepy was wrong, then?

The Witness: Yes.

Mr. Gariepy: I submit that any statement I make is not evidence. Counsel should not argue about any statement I make, nor ask the witness, rather than his own.

Mr. Schaefer: Q. Doctor, you stated in your direct examination yesterday that paper board after it 223 leaves the Cherry River Paper Company does not contain sufficient moisture for any type of bacteria to live on.

A. Any type of organisms with which I am familiar.

Q. How, then, do you account for the fact that your disintegration tests show bacteria present?

A. Will you please read that question again?

(Question read by the reporter.)

A. The answer to that question revolves around the use of the term "to live on." By my interpretation of that, is the sufficient moisture present for the organism to develop, grow and multiply.

Q. That is, it can live?

A. It can live, it can exist, but it can't multiply.

Q. And then when it is furnished food in its living condition, it will multiply?

A. As any bacteriological media.

Q. In the paper manufacturing process, does the time that the paper is exposed to the heat of the dryers vary with the thickness of the paper?

A. Will you read that question again, please?

(Question read by the reporter.)

Q. Does it take longer to dry thick paper, Doctor, than it takes on thin paper?

A. There is a relation there, yes.

Q. That is, it does take longer to dry thick paper 224 than thin paper?

A. Yes.

Q. And so thick paper is in contact with the heat of the dryers for a greater length of time?

A. Yes.

Q. Who selects the paper used by you from the Cherry River Paper Mill in your disintegration tests?

A. The preparation of the samples is carried on by the bacteriological staff of the mill, under directions.

Q. Under whose directions?

A. Under my direction, that is, under directions issued by my laboratory.

Q. Is any one from your laboratory present when the selection is made, Doctor?

A. Only if the selection is made during a survey.

Q. And that is not the normal condition?

A. That is not a constant situation.

Q. Now, in your opinion, Doctor, will consistently high standards of quality of paper, in paper mill operations, and possibly approval by public health officials, depend on the constant adherence to a program of micro-biological control?

A. Yes.

Q. Has the industry made any suggestion as to the making of sanitary inspection of plants manufacturing milk container board?

A. Yes.

Q. What was that suggestion?

A. The suggestion made by the mills was that periodic visits and inspections should be made by the Geneva Laboratory.

Q. That amounts to voluntary action on the part of pulp and paper mills or conversion mills?

A. Yes.

Q. And another method suggested was by federal supervision?

A. That is a possible means of inspection.

Q. Are those the only possible means, Doctor?

A. The only possible means of inspection?

Q. Yes.

A. Unless laboratory tests are made sufficiently comprehensive and complete so that the test of the finished product received by a municipality may be considered an index to the sanitary condition of manufacture.

Q. Laboratory tests made by whom?

A. Made by a qualified bacteriologist within the area or municipality.

Q. That is a suggestion that had not occurred to you as of January, 1938, that last suggestion?

A. It probably had occurred to me but due to the fact that such a method or procedure depends upon the development of methods, it might be some time before such a procedure could be worked out to be called an effective means.

Q. Now, Doctor, an official publication of the International Association of Milk Sanitarians in Orange, New Jersey, which was reprinted in the journal of Milk Technology January, 1938, issue, you made this statement: "Many purchasers and consumers of paper food containers are sensitive to the bacterial counts contained in foods and to the presence of undesirable organisms." Will you explain that statement, please, Doctor?

A. There is an increased interest today on the part of the public in sanitation.

Q. Is that what you mean by "sensitive," Doctor?

Mr. Garipey: Let him finish.

The Witness: I have not quite finished.

Mr. Schaefer: Q. Go ahead.

A. Through the operation of various factors these days, the public is being made aware of sanitary conditions, the nutritive value of food materials, food products. In some cases the bacteriological counts of milk are published through the daily press, and it has been known and it is true that people inquire as to the bacteriological counts of the milk they consume. Questions are asked more frequently now than ever before in my experience as to the bacteriological condition of foods generally. That was the basis on which that statement is made.

Q. Was that what you meant when you said that consumers are sensitive to the bacterial counts and to the presence of undesirable organisms?

Mr. Garipey: I think the question has already been answered by the Doctor's statement.

The Master: Let him answer it again.

A. It is a question of the exact meaning of "sensitive" — "cognizant of"; appreciative of would be better.

Mr. Schaefer: Q. Is that what you mean, you say you used that language, didn't you, Doctor, at that time?

A. Appreciative of; yes.

Q. You didn't mean sensitive; you meant appreciative of?

Mr. Gariepy: I object to his arguing. He has told what he meant.

Mr. Schaefer: I am not arguing. The Doctor and I get along fine.

Mr. Rall: He told you what you meant by one question you asked and I am glad to have him do so.

Mr. Schaefer: And I am glad to have him tell me.

The Master: Q. Now, Dr. Sanborn, can you answer the question without the assistance of all these gentlemen?

228 A. Yes, sir.

Q. Let's hear you answer it.

A. By "sensitive" I mean "appreciative of," and showing great discrimination toward the micro-organisms or the bacterial content of food.

Mr. Schaefer: Q. You didn't mean physically sensitive?

A. No.

Q. In that same paper, Doctor, you wrote this: "Appreciable quantities of dirt and foreign matter may be noticed in the new paper board during their manufacture, particles of metal, pipe scale, sand and carbonaceous matter sometimes occur as well as various foreign fibres and organic residues, the presence of which is occasionally associated with unhygienic or careless practices." Is that statement still true?

A. Yes.

Q. In your opinion, should only those mills which successfully control micro-organisms within their systems be considered by health officials for an approved sanitary status in the manufacture of food wrappers and containers?

A. Yes.

Q. When you made this statement, Doctor, "As manufacturers continue progress in sanitary methods of production and handling, it is probable that standards and specifications will become more stringent"?

229 A. Yes, sir.

Q. You were referring to the recent manifestation, relatively recent manifestation of interest in sanitation?

A. Yes, sir.

Q. And to the improvement that you described earlier this morning?

A. The answer is yes.

Q. Now your paper that you read at the annual meeting of the Massachusetts Milk Inspectors' Association at Worcester, Massachusetts, January 5, 1938?

Mr. Rall: What was the date?

Mr. Schaefer: January 5, 1938.

Mr. Rall: Thank you.

Mr. Schaefer: Q. You stated that several pulp and paper mills are endeavoring to meet certain prescribed Sanitary regulations and to achieve as closely as possible a bacteria-free board for milk containers. To what prescribed standards did you refer, those prescribed by yourself?

A. Those suggested by the research work that I have carried on as illustrated by the conferences, the report of the first and second Milk Container Board Conferences.

230 Q. And at that time you also said this: "Their success in the demand of this goal will depend upon the application of a program of strict micro-biological control based on the utilization of pure process whether satisfactory bacteriacidal treatment, practical mill sanitation and proper protection of finished paper"—those same factors will be today determining of their success in attaining that same goal, in your opinion?

A. Yes.

Q. What is the action of heat resistant organisms on milks? I have in mind this statement you made that the action of heat resistant organisms on milk is well known.

A. You are now asking that question from the standpoint of bacteriological tests.

Q. In order to save time I will withdraw the question, Doctor.

A. There are two answers: From the standard of bacteriological tests—

Q. Let it go. We don't need it. I am sorry, Doctor. I am trying to get through and I don't want to take up too much time.

A. All right.

Q. Now you made the statement in that same paper 231 to which I last referred, Doctor, "Without intimate knowledge and control of the boards used, results of rinse tests made may be inconsistent and misleading."

A. Yes.

Q. What do you mean by "intimate knowledge and control of boards used"?

A. Knowledge of the bacteriological condition, the bacteriological counts of the board.

Q. Is that all?

A. So far as your question was concerned.

Q. Then what you are saying is this, isn't it, without intimate knowledge and control of the bacteriological condition of the board, a test made to determine the bacteriological condition of the board is inconsistent or misleading?

A. No.

Q. What is the purpose of the rinse test?

A. The purpose of the rinse test is to determine the number of organisms per container.

Q. That is to determine the bacteriological condition of the board?

A. That is to determine the bacteriological condition of the finished container as it is filled with milk, at the time it is filled with milk.

232 Q. That is to determine the bacteriological condition of the finished container?

A. To determine the bacteriological condition of the finished container and your result.

Q. Without knowledge and control of the bacteriological condition of the board, rinse tests conducted to determine the bacteriological condition of the finished containers are apt to be misleading?

A. May be misleading, yes.

Q. What do you mean by control of the board used, Doctor?

A. The methods used in controlling the bacterial content.

Q. That is, you mean the things we have discussed previously?

A. Yes, sir.

Q. Sanitary conditions and so on?

A. Yes, sir.

Q. In a paper entitled "The Sanitation of Paper Milk Containers", which was presented apparently by you and Dr. Breed before the International Association of Milk Dealers in Cleveland, Ohio, on October 18, 1938, you said that where containers are not effectively moisture-proofed, several rinses with sterile water yield counts as high as those from the first rinse even after as many as ten trials.

233 A. Yes.

Q. Why is that so, Doctor?

A. That question refers to paper milk containers generally without specific reference to any one type.

Q. All right.

A. Where certain types of containers may not be adequately paraffined and the particular paper board from which the container is made may not be of sufficiently high bacteriological condition, it is possible to obtain bacteriological counts with successive rinses of the same container.

Q. Up to as many as ten?

A. Up to as many as ten.

Q. Beyond ten?

A. It is possible beyond ten, in some cases you would continue to obtain counts, although I did observe that there was a tendency for the counts to decrease even to the point of yielding no organisms after that number of rinses.

Q. What are the factors influencing the efficiency of the paraffining process, Doctor?

A. The efficiency of the paraffining process is the coating agent or, as the general moisture preventative agent.

Q. First, as a coating agent?

A. The temperature of the paraffin bath is one; the
234 condition of the surface of the paper board to be paraffined.

Q. With respect to what?

A. The smoothness or the roughness of the surface.

Q. The pority of the paper board?

A. The pority of the paper board is one; the method of cooling.

Q. How about formation?

A. Formation plays a part, although I am not so sure in relation to coating as in the case of pregation which you are probably going to ask me next. Formation does play a factor.

Q. By formation, you mean the shape?

A. No, I don't mean the shape. I mean the uniformity of the sheet throughout.

Q. I don't know what that means, Doctor. Will you explain it?

A. If you hold the sheet up to the light, you can notice some places it is thicker than others and in some places it is thinner. That is the formation.

Q. Do you mean the uniform thickness of Plaintiff's Exhibit 3?

A. No, it is the uniformity of the distribution of the fibres in the suspension made to make the sheet. If they are well distributed, you get a well-formed sheet. If they are irregularly distributed, there will be irregularities.

235 Q. What determines the presence or absence of those irregularities, Doctor?

A. There are a number of factors. There are a number of factors, the treatment the pulp has received, the possible presence of slime particles in the pulp and the particular method used by the mill to make its sheet, the way the pulp is conducted to the machine, the way it is placed in the machine.

Q. How about the method of paraffining and draining?

A. The temperature of the paraffin in the paraffin bath, of course, is one of the important factors.

Q. Yes.

A. And the rate of cooling.

Q. The what?

A. And then the rate of cooling.

Q. Is that what you mean by the method of paraffining and draining?

A. Yes.

Q. There is not something else?

A. There may be something else depending on the particular procedure, the particular paraffining procedure. Paraffining procedure varies and there is a method of spraying and there is a method of immersion.

Q. Yes, and that is the thing you mean when you speak of the method of paraffining?

236 A. Yes, sir, and with the equipment incidental to those acts.

Q. What do you mean by that?

A. There might be certain equipment used in connection with paraffining which might determine the uniformity of the coating.

Q. Can you be more precise?

A. It is possible that a certain part of the equipment between the immersion and the draining might become hot and the paraffin might drain off practically from that surface. That is just a situation that might arise.

Q. It might drain off and harden?

A. It might drain off from the inside or the outside

of the container, it might make irregularities in the coating. That is an incidental thing, that is not particularly important.

Q. Now, will you take up the moisture-proofing aspect of paraffin, what factors are of importance there?

A. The same factors so far as the sheet and the temperature is concerned holds in the case of the impregnation of the sheet with a moisture-proofing agent.

Q. What is the influence of temperature on the effectiveness of the paraffining process, Doctor?

A. In my experience a better coating of paraffin is
237 obtained at lower temperatures or the temperature scale employed by all manufacturers of paper containers, and a less complete coating is obtained at the higher temperatures.

Q. What are those temperature ranges?

A. Those temperature ranges in a general way, there might be considered to be 160 degrees to 185 degrees Fahrenheit.

Q. You get the most effective moisture-proofing at the lower temperatures?

A. You get the most effective coating at the lower temperatures. There are two factors in this: There is the passage of the paraffin into the board which we call penetration or impregnation and then there is the leaving on the surface of a coating. You could get impregnation at high temperatures, but in the same way a tendency would be for more run off of paraffin when the paper board is heated up to a higher temperature. On the other hand, if the lower temperature is used, you will leave a surface coating as well, in addition to impregnation.

Q. Is that different with respect to temperature, uniform, in those ranges?

A. It is fairly uniform.

Q. How about ranges below 160, would that be
238 more effective from a coating point of view?

A. From a coating point of view it would be more effective but there comes a time when it becomes uneconomical due to using more paraffin than you need to use and may not give you a well appearing container due to the fact you have used so much paraffin, but it is really an economic factor which prevents the use of very low temperature, as you use more paraffin.

Q. It ranges, and at ranges below 160, the coating would be more effective?

Mr. Gariepy: I object to that. The witness just answered that, Master. He said—

The Master: Let him answer it.

The Witness: It would be just as effective.

Mr. Schaefer: Q. From the point of view of coating, would it be more effective, say, at 155?

A. It might be more effective at 155.

Q. 150?

A. I am not acquainted with the economic limit so far as that is concerned.

Q. I am not talking about the economic limit. Disregard economics. I am talking about the production of a better coating, and that is all.

A. I have not observed any coating below 160 in a regular commercial operation.

Q. In your opinion, however, based on your experience and your observation, would a coating at 150 be more effective?

Mr. Rall: For what purpose?

The Master: The same purpose that it is put on now, I suppose.

The Witness: Yes.

Mr. Schaefer: Q. It would be?

A. Yes.

Mr. Schaefer: I am almost through.

The Master: Go ahead.

Mr. Schaefer: Q. Now, does the length of time of immersion in paraffin influence the effectiveness of the paraffining process as a coating agency?

A. It is a factor but due to the wide variation among commercial operations in that type of paraffining, it is difficult to state just what the time factor should be or might be. In one operation a very short time is adequate. With another type of operation, it is necessary to use a longer period of time. Those are adjusted and standards for each operation to yield the most effective results. That is, I mean to adequately moisture-proof the container.

The Master: May I interpose a question there?

Mr. Schaefer: Surely.

The Master: Q. When you are talking about paraffining I notice that that container first, on the outside there appears the statement "Keep cool"—and "Keep Dry". Does that have any relation at all to the paraffining?

Mr. Rall: Referring now to the milk carton container?

The Master: The big container there.

Mr. Rall: The corrugated box containing a dozen quart dummies?

The Master: Yes.

The Witness: On the box, is it?

The Master: Yes—"Keep cool" and "Keep dry".

Q. Why the "Keep dry", particularly? And "Keep cool"?

A. To prevent the carrier carton from soaking up water and in that way collapsing or not being suitable for further use.

Q. The carrier carton?

A. Yes, that is what that box is called, the carrier carton.

Q. Does it have any relation at all to the container of the milk?

A. It simply is a carrier for the container.

Q. Does that injunction or mandate to keep dry have anything to do with the milk carrier itself?

A. Not any direct relation.

Q. It only has reference to this outer carton?

241 A. To the box, that's right.

Mr. Schaefer: Q. Now, on your direct examination yesterday, Doctor, speaking about the sterilization of glass bottles, you said this: "In my experience commercial practices are not comparable in efficiency with home practice." On what experience of yours is that statement based?

A. It is not based on experience, only on observation, and only my opinion.

Q. Only what?

A. Only my opinion.

Q. And on what observation, Doctor?

A. The observation of the procedures utilized by the housewife, the care taken.

Q. How many wives or housewives have you seen wash glass milk bottles?

A. I am enumerating a good many of my friends, or I can enumerate them, but that would be quite a task. It has been a common observation of mine to notice such things, since I am interested in sanitation.

Q. Do you want to qualify the statement that you made yesterday in any way, Doctor?

A. I was not sure whether that was on or off the

record, it was more or less a facetious remark, although I believe it to be true, I cannot substantiate it on regular bacteriological tests.

242 Q. Doctor, calling your attention to Plaintiff's Exhibit 13, will you please examine the middle row of milk containers shown on that exhibit and tell me whether or not in your opinion those containers in that middle row are bottles?

A. In my opinion those containers would be more properly termed cups.

Mr. Schaefer: That's all, Doctor, thank you.

Mr. Rall: May I have the January, 1938, issue of the Milk Technologist and the paper, the Milk Inspector?

I will ask to have this document marked Plaintiff's Exhibit 21 for identification.

(The document referred to was thereupon marked by the reporter "Plaintiff's Exhibit No. 21 for identification".)

Redirect Examination by Mr. Rall.

Q. Doctor, I show you Plaintiff's Exhibit 21 for identification, consisting of a fly leaf and five printed pages and ask you to examine it.

(Witness examines document.)

Q. (Continuing) Is this exhibit which I show you the complete article of yours, from the January, 1938, issue of the Journal of Milk Technology?

A. Yes, it is.

243 Q. From which counsel read a portion?

A. Yes.

Q. Now, look at Plaintiff's Exhibit 22, which I will ask to have marked for identification at this time.

(The seven planograph sheets referred to were thereupon marked by the Reporter "Plaintiff's Exhibit No. 22 for identification".)

A. Yes.

Q. That document which consists of a fly leaf and seven planograph pages?

A. Yes.

Q. Is that the paper which you read to the annual meeting of the Massachusetts Milk Inspectors' Association January 5, 1938, of which counsel read portions?

A. Yes.

Mr. Rall: I offer in evidence Plaintiff's Exhibits 21 and 22.

Mr. Schaefer: I object to it.

Mr. Rall: I ask leave to substitute copies in lieu thereof.

The Master: He objects. What is the purpose of this offer?

Mr. Rall: The purpose of this offer is to show the complete statement of the witness from which counsel attempted to extract certain portions.

244 The Master: It doesn't make it, the whole document, admissible if a man talks for ten hours and in the course of a ten-hour talk says some word in one paragraph, you might conceivably have the whole paragraph, but that doesn't make the whole ten-hour talk competent.

Mr. Rall: It was all on the same general subject and I think in fairness to the witness and in fairness to our case, counsel should not be permitted to extract one paragraph without putting the entire talk in, because the value of that cannot be tested.

The Master: There is no showing that the rest of the article is in any way explanatory of what was read or extracted by counsel.

Mr. Rall: I say when he is discussing the general subject of the sanitation of paper milk containers, that whatever he says in that record, and it is all relevant to that subject, is relevant here.

The Master: What do you say about it, Mr. Schaefer?

Mr. Schaefer: That is a new doctrine to me. There is no basis for the offer.

The Master: I sustain the objection.

Mr. Rall: Q. On your cross-examination you referred to certain standards of sanitation for paper containers. I

show you Plaintiff's Exhibit 19, particularly pages 50
245 through 53, and ask you whether or not those are the standards that you referred to?

A. Those are the standards that I referred to.

Mr. Rall: I now re-offer separately pages 50 to 53, inclusive, of Plaintiff's Exhibit 19 that was identified yesterday.

Mr. Horan: Was that introduced in evidence?

Mr. Rall: No. It was refused.

The Master: Will you read that back, please?

(Record read by the reporter.)

The Master: Is there any objection?

Mr. Schaefer: Yes, sir, there is an objection. My recollection of the cross-examination was that no question was

asked Dr. Sanborn as to the standards proposed by him which is what those standards are. I asked him as to whether or not there should be standards, whether there were standards for various things whether in his opinion those standards were satisfactory. That is all.

Mr. Hall: Now, with all due respect to Dr. Sanborn, I think it should be received, if you include page 54. That is satisfactory, isn't it, Mr. Schaefer?

(Discussion outside the record.)

Mr. Schaefer: I don't think his proposed standards are material here.

Mr. Rall: There has been an effort made to lead the 246 Court to believe that this thing is a wholly untried purely experimental proposition, perhaps a crack-brain proposition.

The Master: I have not been aware of that.

Mr. Schaefer: I was not aware of that.

Mr. Rall: These standards which are part of the literature of this field, public health field, quite apart from the question on cross-examination; we certainly have the right to show.

The Master: You just want them in to show somebody's thought on what ought to be done with this kind of material.

Mr. Rall: As result of the conferences, but the witness has already testified—at which the City of Chicago was represented—and that these standards have been published and given wide distribution.

Mr. Schaefer: We don't know whether the City of Chicago got them or not.

The Master: I can't see where it will do any harm one way or another. I will let it in for what it is worth.

Mr. Schaefer: What are we letting in?

Mr. Rall: I have offered separately, pages 50 to 53, inclusive, of Plaintiff's Exhibit 19 without prejudice to the offer of the entire document as was made yesterday. I offer pages 50 to 54 of Plaintiff's Exhibit 19 without 247 prejudice to the offer of the entire document which was made yesterday.

(Discussion off the record.)

Mr. Rall: It is understood I am offering pages 50 to 54 of Plaintiff's Exhibit 19, commencing "Paper Containers for Milk Boards, of sanitation to be observed in their manufacture and use," commencing about the middle of page 50 of Plaintiff's Exhibit 19 for identification.

The Master: Has there been a ruling on the pages 50 to 54? Did you withdraw your objection to pages 50 and 54?

Mr. Schaefer: With the exception of the portion of page 50 which has been designated by Mr. Rall, I withdraw the objection.

The Master: That may be received.

(Said pages 50 through 54, inclusive, of the document heretofore marked Plaintiff's Exhibit 19 for identification, so offered and received in evidence as PLAINTIFF'S EXHIBIT 19, and is attached hereto and made a part hereof.)

The Master: Now you are going to Exhibit 12.

Mr. Rall: Yes.

Q. I show you Plaintiff's Exhibit 12 and ask you 248 whether that is the article entitled "Sanitation of Paper Milk Containers" from which counsel read to you and asked you questions on your cross-examination?

A. Yes, sir.

Mr. Rall: I offer in evidence PLAINTIFF'S EXHIBIT 12 in explanation of the cross-examination. On the same theory, I offer PLAINTIFF'S EXHIBITS 21 and 22.

Mr. Schaefer: I object.

The Master: What is that?

Mr. Schaefer: This is another document to which he said I referred on cross-examination.

The Master: Some extract read from it and you want the whole article in?

Mr. Rall: Yes.

The Master: If I make the same ruling, it may be excluded, unless you can show there is something in that document which explains the extract.

Mr. Rall: To clear up this question of tests on paper milk cartons, there are two particular types of tests: The disintegration test and the rinse test, is that correct?

A. The disintegration test, the rinse test and sterility test.

Q. What is the nature of the sterility test?

A. The sterility test involves placing into the container under therapeutic conditions sterile nutrient broth, 249 rinsing the container with broth and incubating the broth in the container for a suitable time.

Q. Both the rinse and sterility tests are designed to disclose the presence or the absence of surface bacteria or micro-organisms, is that correct?

A. Yes, sir.

Q. The disintegration test is designed to do what?

A. To show the presence of micro-organisms, if any, in the entire fibre board.

Q. Are there standard procedures for the making of all of these tests that you referred to?

A. No.

Q. Have you on pages 47 to 50, inclusive, set forth a procedure for the making of disintegration tests?

A. Yes.

Q. You referred yesterday to a different type of machine than you pictured here.

A. Yes, sir.

Q. How many types of machine are there available for the making of this disintegration test?

A. I have knowledge of approximately five.

Q. Are these expensive or inexpensive machines?

A. They vary in cost.

Q. Will you give us an approximation of the price range?

250 A. So far as I am familiar with the subject, the cost of the devices that I have used are about \$20 to \$30.

Q. Referring now to Plaintiff's Exhibit 3, incidentally you tore that yesterday to demonstrate the fact that the printing was on the surface only.

A. Yes.

Q. And before you tore it, it was just a flat carton with four sides, top and bottom under seal?

A. Yes.

Q. Would a disintegration test on that carton or cartons of that type made in the City of Chicago, after the carton has been converted and sent to the plant, in your opinion disclose whether or not that carton had been manufactured under sanitary conditions and was then in a sanitary condition?

A. Do I understand you to say made in the City of Chicago?

Q. Tests made in the city of Chicago.

Mr. Schaefer: I object to that question. The witness has already answered that same question.

Mr. Rall: As to board generally, but you refused to let him talk about this board. You wanted to talk about everything else.

The Master: I will let him answer.

The Witness: Such tests would give an index to the sanitary condition of the original board in the process of manufacture.

Mr. Rall: Q. And it would give, would it not, an absolute test as to whether or not that particular carton that was under examination was sterile or contaminated?

A. Yes.

Q. And by picking at random cartons of that kind at the milk plant, would it be your opinion that the public health authorities in the City of Chicago could determine whether or not the cartons being used were sterile or contaminated?

Mr. Schaefer: That is objected to, if the Master please, because that determination involves a degree of the definition which is officially committed to the officers of the health department of the City of Chicago.

Mr. Rall: You start to prove that the health department would have to use their resources to establish a branch at the Cherry River plant, at least that was the implication of that testimony.

Mr. Schaefer: I wanted to find the facts about the method of manufacture of the paper.

Mr. Rall: We are interested in the Pure-Pak container and feasible methods of health control and not theories.

252 Mr. Schaefer: It seems to me that is a matter for argument.

The Master: Read the question.

(Question read.)

The Master: I will let him answer.

A. Yes.

Mr. Rall: Q. You referred to various types of machines and various exposures to paraffin or to various paper cartons. Referring now to the Pure-Pak carton, can you state what the paraffining treatment by the Pure-Pak machine is?

A. The paraffining treatment by the Pure-Pak machine is a treatment of immersion.

The Master: Q. Is that any different than the treatment that you described yesterday?

A. It is substantially the same as I described yesterday.

Mr. Rall: Q. Do you know how long that immersion takes place and the degrees?

A. So far as my knowledge goes I would say that the temperature is approximately 172, to 176 degrees fahrenheit for a period of approximately 25 seconds.

Q. When you stated on cross-examination that paraffining at 150 degrees would be more effective, you meant the coating would be thicker, is that true?

253 A. I meant the coating would be thicker.

Q. In your opinion is the coating by an immersion for the time and at the temperature you have stated in the Pure-Pak machine sufficient to give an effective paraffining particularly having in mind water-proofing and sealing as distinguished from any bacteriacide action?

A. Before I answer that question, I would like to say there is one other factor that I was asked about on cross-examination or at least in the testimony during cross-examination to the effect that there are other factors that influence coating, or coating efficiency, one of which was the surface condition, the smoothness or the roughness of the surface and possibly other physical factors, keeping in mind that there are variations in that.

Q. I would like to talk to you about the carton that is here involved.

A. Yes.

Q. I just want to talk about this carton and our machine.

A. There are still variations in the physical properties of various paper board and so far as my knowledge goes, given a satisfactory board which, of course, can be produced and is being produced, it is possible to obtain
254 effective moisture-proofing of this container.

Q. Have you made the tests that you described on containers similar to Plaintiff's Exhibit 2?

A. Yes.

Q. Have they been made after they have been paraffined?

A. Yes.

Q. And in your opinion, was the paraffining job, so to speak, on the samples that you tested efficient and satisfactory?

A. The impregnation of the board was satisfactory; there was a certain amount of surface fibre that would pick up a small amount of milk, not enough in my opinion to be of significance either from a sanitary standpoint or from a standpoint of the weights and measures. The average loss from a quart container of milk would average from two to three cubic centimeters.

Q. How many cubic centimeters are in a quart of milk?

A. 946 cubic centimeters.

Q. You referred yesterday in response to the Master's questions about the possibility of the paraffining being chipped off by ice. I show you a corrugated carton approximately 12 inches long and 8 inches wide, 10 inches high, which the Master referred to—"Keep cool"—"Keep dry"; showing you the carton, there are 12 dummies similar to Plaintiff's Exhibit 2. Will you state whether or not 255 this is the method by which the milk, after it is packed and taken from the machine, is packaged for delivery?

A. Yes, that is the method.

Q. Have you seen that done?

A. I have seen that done.

Q. And when the carton is prepared for placing on the truck, is the top sealed with an adhesive strip?

A. Yes.

Q. Such as this which has been torn open?

A. Yes.

Q. Referring again to Plaintiff's Exhibit 2, prior to yesterday the pouring spout had not been opened, is that true?

A. Yes.

The Master: Q. How does the milk man carry that around from apartment to apartment?

A. He can carry it on his shoulder. The weight is not great.

Q. Every milk man I have ever seen has a tray of some kind with a handle on it and the milk bottles fit into the tray and he carries bottles of cream and milk and carries a number of other things. I don't see how he is going to carry any milk bottles around on his shoulder, the way you have just stated.

Mr. Rall: I will make this statement: I don't know 256 of any house-to-house delivery using this and I don't expect it.

The Master: Using what?

Mr. Rall: Using paper cartons.

The Master: You don't know of any?

Mr. Rall: I expect there may be a few small installations. I expect that the use of them will be pretty much confined to chain stores, at least stores and milk people. That has been the history of it.

Mr. Schaefer: Just on that point, let me get straight. Is it agreed between the plaintiff and the defendants that the

use of these containers involved in this suit is here sought only for use in chain store distribution?

Mr. Gariepy: No. For chain store distribution and for sale to the retail trade as the retail trade desire it and as well as can be made. The matter of the handle or the matter of the details, that situation will be taken care of when the milk man sees fit to make delivery.

The Master: The reason I asked about the tray was that it seemed to me in handling the individual paper bottles, there might be some friction, there might be some moisture on the outside of the bottles. That is what I observed in that tray.

Mr. Rall: I got your point.

257 The Master: You are talking about delivering the various paper bottles in a cardboard carton to chain stores.

Mr. Gariepy: Which are being done at the present time in 46 suburban towns and villages in Cook, DuPage and Lake Counties, Illinois.

The Master: What is being done?

Mr. Gariepy: Delivery just like that.

The Master: To individual consumers?

Mr. Gariepy: To chain stores and from the chain stores to consumers as they come in.

Mr. Rall: I don't know why I said chain stores, but it is stores. I don't think we are willing to limit the permission sought to chain store sales, but I am very frank to say that if the City were to offer us a permit so limited, we would think a long time before we refused it, because the history of this has been in other communities that it largely is a sale through a chain store proposition because of the economic principle that the use of the glass milk bottle, you get it back, which you can do if you deliver it to the home, and you know where it has been, the use of the glass milk bottle which is less than the cost of destroying one of these.

Mr. Schaefer: I didn't want to mislead you by any
258 question, but I wanted to find out what the situation is.

I have no authority to issue you a permit.

Mr. Rall: So far as the house-to-house delivery is concerned, I think that would be infrequent because of the economics involved here.

The Master: On account of the economic problem, did you say?

Mr. Rall: Yes.

The Master: What do you mean?

Mr. Rall: In other words, a glass milk bottle according to some authorities is used about 30 times. The use of that glass milk bottle is cheaper than the cost and the destruction of one of these paper containers which can be used only once. To give another illustration, the actual costs are more than the use of a glass bottle which they sometimes use certain people to collect them, in order to get their bottle back, they have an organization and they have to have a deposit and they have several sources through which they work but they would rather pay a little premium on the paper container than to fuss with the bottle and getting the deposit for the bottle and bringing the bottle back and making the refund and then, too, this is about half of the space that the glass bottle takes.

The Master: Did the experiments you were discussing here have in mind the sale of some of these cartons containing milk bottles to chain stores?

Mr. Schaefer: I would like to say, if the Master please, that we are not interested in the consumer acceptance. We are interested only in the public health angle. As a matter of fact, we are not interested at all in the economic aspect of it. There is a debatable question whether a public health officer should be interested in the cost of milk. In this instance, we are not entering that ground.

Mr. Rall: Mr. Garipey is going to have some more questions, probably more than I will have. May we adjourn now, Master?

The Master: Are you through with your questions?

Mr. Rall: Yes.

The Master: We will adjourn now until 2 o'clock.

(At 12:50 P. M. recess taken to 2 o'clock P. M.)

Thursday, June 1, 1939,
2 o'clock p. m.

Met pursuant to recess.

Present:

Frederick A. Gariepy, Owen Rall, of counsel, on behalf of plaintiff;

Barnett Hodes, Corporation Counsel, City of Chicago, by Walter V. Schaefer and Charles P. Horan, Assistants Corporation Counsel, on behalf of defendants.

261 The Master: You may proceed.

JOHN RAYMOND SANBORN, was called as a witness on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Mr. Gariepy: I think the record ought to show clearly that the redirect examination by Mr. Rall of this witness this morning is being accepted by the plaintiff, Fieldcrest Dairies, and also the offering in regard to Plaintiff's Exhibits Nos. 12, 20, 21 and 22.

Redirect Examination by Mr. Gariepy.

Q. Doctor, Mr. Schaefer asked you at length yesterday concerning the matter of acid water and bacteria growing. I ask you the question, does bacteria grow well in acid water?

A. No.

Q. Could white water contain pathogenic bacteria?

A. No, in the normal processes of operation.

Q. Have you examined Plaintiff's Exhibit 2 here, the single service container, with regard to the matter of bacteria count about the lip, the pouring lip? That is the
262 filled container. I am showing you Exhibit 2, which was torn yesterday at the pouring lip.

A. I have examined this stock around the pouring lip.

Q. And what did you find concerning the bacteria count

of the stock and the bacteria around the pouring lip of that container, Exhibit 2?

A. I found that the bacterial content of the stock around the pouring lip to be substantially the same as the original paper board from which the paper was made.

Q. With regard to your tests on the Pure-Pak container and the paper board that goes to make that container, did you perform certain tests on February 18, 1939, or about that date, on this subject, and report the same?

A. Yes.

Mr. Gariepy: I will ask the reporter to mark this report Plaintiff's Exhibit No. 23 for identification.

(The report referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 23 for identification.)

Mr. Gariepy: Q. Will you look at Plaintiff's Exhibit 23 for identification and tell me whether that contains your findings and your report on the chemical analysis and the research work you did on those containers?

A. It does.

263 Q. Is that the last one that you performed on the board in question here?

A. It is one of the last. There may have been one or two since then.

Q. Is that your signature, Doctor, on the bottom?

A. Yes.

Mr. Gariepy: I offer that in evidence.

Mr. Schaefer: I have no objection.

The Master: It may be received.

(The report of Dr. Sanborn referred to was received in evidence as PLAINTIFF'S EXHIBIT NO. 23, and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. Doctor, you were asked this morning concerning the matter of a standard with regard to the bacteria count in paper, paper board, that goes in to make up the single service paper milk container and whether there was such a standard or not. Do you remember that cross-examination?

A. Yes.

Q. Do you know what data and statistics the two hundred cities and villages that you mentioned yesterday in your testimony as using this container use in the way of data to guide them as to the susceptibility of the container?

264 Mr. Schaefer: I object to that.

The Master: Read the question.

(Mr. Gariepy's question was read by the reporter as above recorded.)

Mr. Gariepy: For use in the sale of milk.

The Master: Q. Do you know?

A. Yes.

Mr. Gariepy: Q. What is that data that these cities and villages have and use, Doctor, as their guide as to the suseptibility of the container and the product?

Mr. Schaefer: That is objected to as immaterial.

The Master: I will let him answer.

The Witness: A. The only available standard that I have any knowledge of is the standard that was cited or suggested as the result of the research work done at the New York State Experimental Station.

Mr. Gariepy: Q. And that is the station you are connected with?

A. Yes.

Q. And do you know anybody else who gives out data on research and analysis on paper board that goes into single service containers to these cities and villages to use as a guide and as data?

Mr. Schaefer: That is objected to.

The Master: I will overrule the objection.

265 The Witness: A. That is the standard that is generally accepted. Other laboratories run the tests, but they conform to that general standard.

Mr. Gariepy: Mark this list Exhibit No. 24.

(The list referred to was thereupon marked Plaintiff's Exhibit 24 for identification.)

Mr. Gariepy: Q. I show you a piece of paper consisting of two typewritten sheets, with the last six lines in long-hand, and ask you if you ever saw this before?

A. Yes, I have seen such a list before.

Q. What is that list, Doctor?

A. This is a list of the cities and towns using paper containers for milk.

Q. And have you furnished statistical data and research data to those cities and villages and towns for the use of the single service paper milk container?

Mr. Schaefer: That is objected to as immaterial.

The Master: There is no showing here that he has furnished anything to these cities.

Mr. Gariepy: I am asking him now.

The Master: He says he has seen such a list.

Q. Do you know whether that is the same list you saw the last time?

A. It is a similar list and probably is a copy of the 266 original list that I saw.

Q. Do you know whether it is a copy?

A. That would be very hard to state. To my best knowledge it is a copy.

Mr. Gariepy: Q. Doctor, did you prepare Exhibit No. 24 in your left hand at the time you prepared Exhibit No. 23 in your right hand and signed it?

A. At about the same time.

The Master: Q. Did you prepare this Exhibit 24?

A. I prepared such a list, yes, such an exhibit.

Q. Did you prepare this list? Not such a list.

A. This, I believe, is a copy of the original one that I submitted.

Mr. Gariepy: It was typed on the same machine, of course, as the original one. It was done as a simultaneous operation.

The Master: Q. Do you know whether this is a carbon copy of the list that you prepared, or not?

A. I did not see the carbon made. It is that type of list, yes, and I have no doubt that it is. Now, there is some writing down here that is not my own. I assume they are the same cities that I wrote in myself. It is better writing than mine, by the way.

Mr. Gariepy: Mr. Reporter, will you mark this letter as Plaintiff's Exhibit No. 25 for identification.

267 (The letter referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 25 for identification.)

The Master: Q. As you look over the list of those cities, according to your recollection those are the cities you had on your list?

A. Yes.

The Master: I will let Exhibit No. 24 go in, the list.

(The list of cities and villages referred to was marked PLAINTIFF'S EXHIBIT NO. 24, and received in evidence, and is attached hereto and made a part hereof.)

Mr. Schaefer: My objection, of course, goes to the materiality of it.

The Master: Yes, your objection goes to a different question. What was that question?

Mr. Gariepy: Q. I show you Exhibit No. 25 for iden-

tification, and in connection with Exhibit No. 24, the list, was that letter initialed and written by you?

A. Yes, it was.

Q. Now, does that refresh your recollection as to whether you prepared this list?

A. Yes, it does.

Q. And did you prepare this list, this last exhibit, 268 No. 24?

A. Yes.

Q. It bears your initials?

A. Yes.

Mr. Gariepy: I offer that letter in evidence.

The Master: Well, since the question has been opened up again:

Q. Do you know that the list marked as Exhibit 24 is the list that was enclosed with your letter?

A. I tried to reply, if you will pardon my hesitancy in answering, that in going over each one of the cities, as the Master suggested, I recognize practically all of them just from memory. I am convinced that it is, but of course I did not see the carbon.

The Master: Exhibit 25 may be received.

(The letter written by Dr. Sanborn referred to was thereupon marked PLAINTIFF'S EXHIBIT NO. 25, and is attached hereto and made a part hereof.)

Mr. Schaefer: Has the Master ruled yet on 24?

The Master: That question of his to which you objected? I don't remember what it was, now.

Mr. Schaefer: The question has been dropped, I take it, but I asked whether Exhibit 24 went in.

The Master: Exhibit 24 we let go in. He examined the names and said that to the best of his recollection the 269 list reflects the names he had in his mind.

Mr. Schaefer: And my objection shows, I take it, on the record, that it is immaterial.

The Master: Yes.

Mr. Gariepy: Q. Doctor, do you know or can you look at Exhibit 24 here and tell me how many of these cities and villages operate and supply milk under the United States Public Health Medical Ordinance and Service?

A. No.

Q. You cannot tell that?

A. No.

Q. You were asked this morning concerning the matter

of a standard milk bottle. I show you an exhibit here marked No. 26, being a quart bottle of milk.

(The quart bottle of milk referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 26 for identification.)

The Master: Wait a minute. We cannot very well make a bottle of milk an exhibit.

Mr. Gariepy: I know, but I want to have the top in here. There has been a lot of talk about the top and the cap. These exhibits that I have here and that I have put on the Master's table are bottles of milk I purchased twenty-five minutes ago across the street from the Federal Building at

Barclay's, paid the regular price for them and got them 270 in the regular course of trade. I am going to ask the witness to identify, after they have been properly marked, these bottles, and testify concerning the caps at the top of the bottles and ask him concerning the type of cap he performed tests on for the bacteria count, whether or not that is the type.

I will ask the reporter to mark this smaller bottle of milk for identification as No. 27.

(The pint bottle of milk referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 27 for identification.)

Mr. Gariepy: Q. Doctor, I show you Exhibit No. 26, which is a quart bottle of milk, sweating on the outside, with a red cap, with a hood. Can you tell me whether or not that is commonly accepted in the trade as a standard milk bottle?

Mr. Schaefer: I object to that, on the ground that the witness' opinion on that question is not material.

Mr. Gariepy: You have been bahooing here about the standard milk bottle in your ordinance and whether these things are standard and that you can't take them unless they are standard. You have been talking about bottle tests being made by the City of Chicago. Let us take the actual product now.

The Master: Just a minute. Let us not have an 271 argument.

Mr. Gariepy: I am not having an argument.

The Master: Every time he makes an objection, you make a speech.

Mr. Gariepy: I didn't intend to.

The Master: Read the question.

(Mr. Gariepy's last question was read by the reporter as above recorded.)

The Master: Q. If you know. Do you know?

A. It is not, as far as my opinion goes, accepted as a standard milk bottle.

Q. What? It is not what?

A. It is not accepted as a standard milk bottle, as far as my opinion goes.

Mr. Gariepy: Q. I ask you the same question with regard to Exhibit No. 27, which purports to be a pint bottle.

A. I don't know that there is any such standard as that in a milk bottle.

The Master: Q. A standard as what?

A. That that bottle may be considered a standard. In my opinion there is no standard or no evidence to show that is a standard milk bottle. In other words, I don't know what a standard milk bottle is. If you ask me whether or not that is a recognized standard milk bottle, in my 272 opinion it is not. It is a milk bottle, but not necessarily standard.

Q. It is a milk bottle?

A. It is a milk bottle, yes.

Q. If it did not have any milk in it, you would recognize it as a milk bottle, wouldn't you?

A. I would recognize it as a milk bottle, yes.

Mr. Gariepy: Let the record also show that both of these are marked at the top "Grade A, Pasteurized Milk, Devine's Dairy. To Be Sold Before Noon Friday," which the ordinance requires to be on the caps, and the same applies to Exhibit No. 26.

Q. Now, Doctor, have you made tests concerning bacteria count in caps, such as the caps you see on those two exhibits, Nos. 26 and 27?

A. Yes.

Q. And what did those tests show concerning bacteria count in the caps?

A. The bacteria count in a cap board is substantially the same as the bacteria count in a milk container board.

Q. Would the fact, Doctor, that the same material that is in the cap would reach all the way around this bottle and give it the circular or whatever shape this may be, would that in any way cause the bottle or the receptacle to 273 be more dangerous to public health, in your opinion?

A. No. These are made out of the same material, Master, as this bottle.

The Master: Q. The bacteria count on the inside of the

paper board cover is something you have ascertained, is that correct?

A. Yes.

Q. Have you ascertained also the bacteria count on the inside of the glass bottle?

A. No; not under comparable conditions. Just the cap.

Q. Just the cap?

A. Yes.

Q. We will say the inner surface of one of these paper containers would be in area ten or fifteen or twenty times as much as the area of this milk bottle cover. Wouldn't that mean around 20 times as much bacteria?

A. It might mean an added bacterial count, but the general quality of the board would be the same by bacteriological test.

Q. What I am trying to get at is this: If the bacterial count on the inside of the bottle per square inch is less than the bacterial count of a square inch of paper cover, then a quart paper container would be higher in bacterial count than a quart bottle container, wouldn't it? Do I make 274 that clear?

A. Not exactly, sir.

Q. Here you have a quart paper container. Here you have a quart bottle container?

A. Yes.

Q. Now, if the glass, the inside of a bottle has less bacterial count than the paper cover, then would it follow that the whole glass bottle would have less bacterial count than the whole paper container?

A. I see what you mean.

Q. The assumption would be that the paper container would have as much bacterial count per square inch as the paper cover of the bottle?

A. That would depend somewhat upon the moisture-proofing. If that were moisture-proofed—

Q. Indicating the paper container?

A. Indicating the paper container. If that were adequately moisture-proofed, it would not follow at all, because there might be no organisms on the inside at all, while there might be some trapped in the board. There might be some trapped in here, which may be paraffined over, and that would make it essentially a sterile container. If this were treated the same way—

Q. Referring to the milk bottle?

A. Yes.

275 Q. The cover or the bottle?

A. The cap.

Q. The cap?

A. It would be sealed off exactly as the bacteria in the board. So that does not necessarily follow. It depends on the efficiency of the paraffin on this container.

Q. Let me put it this way: Assuming that the inside of the paper cover of the glass bottle were paraffined, you would find a bacterial count on the inside of that paper cover, wouldn't you?

A. You might find a bacterial count on the inside, yes.

Q. Assuming now that you had a quart paper container, paraffined to the same extent as the inside of the paper cover of the glass bottle; in other words, you would have the same bacterial count per square inch of the paper container as you would have of the paper cover of the milk bottle?

A. Yes.

Q. Would you say that in your ordinary experiments or under ordinary conditions you would show a higher bacterial count by merely multiplying per square inch found on the inside of the paper cover of the paper container as there would be on the inside of a glass bottle, is that correct?

276 A. Not exactly.

Q. Here, say, you have a bacterial count on the inside of the paper cover.

A. Yes.

Q. Then the inside of a quart paper container is just so much more in area as the inside of this paper cover of a glass bottle?

A. Yes.

Q. Now, it is just a mere matter of multiplication to see what the bacterial count would be on the inside of the paper container?

A. Yes.

Q. If the paper cover of a glass milk bottle contains more in bacterial count than the inside of the glass milk bottle, then it would follow that if the paraffining is about the same the inside of the paper container would have a higher bacterial count than the glass bottle, wouldn't it?

A. Yes, granting that we know what the bacterial count of the paper is and all that is under control.

Q. If your primary assumption is correct, that the inside of the paper cover of the glass bottle contains a higher bacterial count per square inch than the inside of the glass bottle; then the other would have to follow, wouldn't it?

277 A. It would have to follow.

Mr. Rall: But this is on the paraffin. His testimony about this cap, his testimony that this cap had a greater bacterial count than the glass was on the assumption that it was not paraffined.

The Master: Q. Is that correct, Dr. Sanborn? Is the inside of this paper cover of the glass bottle paraffined?

A. It is not paraffined. It is impregnated with paraffin.

Mr. Rall: Is it at this time?

The Witness: Yes.

Mr. Rall: With paraffin?

The Witness: Yes.

Mr. Rall: Then I am wrong about that. Professor Tanner has done a lot of work on that, I think perhaps more than Dr. Sanborn has.

Mr. Gariepy: You can take the cap off.

The Witness: You can see the paraffin on there.

The Master: Yes, he says there is paraffin.

Mr. Gariepy: Let the record show that the witness took off the cap from the bottle.

Q. Doctor, is the amount of bacteria that is found on the inside of that paraffin cap or hood that you are putting back, of a harmful quantity?

278 A. No.

Q. Suppose you had the space or area of fifty of these contained in Exhibit No. 2, would the fifty multiplied be a quantity harmful to health?

A. No.

Q. With regard to Exhibits 26 and 27, do you know whether these are commonly accepted receptacles, the same as these bottles or containers shown in Exhibits 13 and 14?

A. Commonly accepted, yes.

Q. Doctor, are there any liners used in paper containers made of second grade stock, such as you described yesterday, for breakfast foods, and so on?

A. Paper containers for milk, you mean?

Q. No.

A. Referring to this?

Q. No. Are there liners used in containers made out of

second grade stock, we will call it, not prime stock, not virgin spruce pulp?

A. Yes.

Q. And what is the object of those liners?

A. The object of a liner is to serve as a filler.

The Master: Q. What do you mean by a liner, Dr. Sanborn? Can you tell me what is a liner?

A. This is built up in layers.

Q. What?

A. In layers.

279 Q. Yes.

Mr. Schaefer: I can't hear him.

The Witness: A. In the container he speaks of, there is a filler on the inside, the middle part of the container, and there are liners on the outside of the filler, so you have three layers, two outside layers and a middle layer, which is a filler.

The Master: Q. Which is the liner?

A. The liner would be the two outside layers. Then you have a bottom liner and a top liner.

Mr. Garipey: Q. Are those liners made of virgin spruce pulp?

A. Yes.

Q. Are you authorized or now engaged by departments of health of various cities to make sanitary inspections and investigations of paper mills and paper blanks before they use the products from the blank in milk containers?

A. I am authorized by departments of health to conduct investigations along those lines.

Q. Is the water supply a problem in question at the Cherry River Paper Company, or where the Pure-Pak container raw material is made?

A. No.

Q. Counsel asked you yesterday considerable about 280 slime. Has it any sanitary significance, Doctor?

A. It has a significant effect on the final bacteriological count of the finished product, that is, of the paper board.

Q. Have you in your tests and research at the Cherry River Paper Company found that slime entered into the question of the fitness or the unfitness of the paper board?

A. No.

Q. What is this question of water supply that Mr. Schaefer asked you about extensively yesterday, at the

mill? What is the water supply? What do you mean by it?

A. The source of the processed water used in the manufacture of paper, paper and pulp.

Q. What is it at the Cherry River mill in question?

A. It is a river called the Cherry River, fed by mountain springs arising in a national forest in West Virginia.

Q. Is this water treated and tested before it is used in the mill?

A. Yes.

Q. Do you know whether the Cherry River Paper Company have a laboratory there for the purpose of performing research work and testing?

A. Yes.

281 Q. Are you acquainted with its equipment and facilities?

A. Yes.

Q. Is it, in your opinion as an expert and analyst, chemist and so on, a well-equipped laboratory for performing tests on paper board?

A. They have an adequate setup for such work.

Q. And how long, do you know, have they had such equipment and such a setup?

A. They have had such a setup for at least a year, and within the last four or five months it has been much improved.

Q. At whose suggestion, if you know, were the improvements made?

A. The improvements were made at the suggestions made by me.

Q. And is broke and trim used in the virgin spruce pulp turned out as a finished product by the Cherry River Paper Company?

A. Some broke is used.

Q. Have you been able to detect any higher bacteria content in that paper board turned out where broke is used?

A. No, sir.

Q. With regard to this Syracuse letter that you were cross-examined about at length yesterday, will you
282 explain the circumstances under which you made that address shown in the Syracuse letter that counsel read from on your cross-examination; who were you addressing and who were the parties present?

Mr. Schaefer: So that I can understand the question, what Syracuse letter are you referring to?

Mr. Garipey: You referred, counsel, to a letter that the Doctor wrote here, which has been circularized, concerning the matter of the water supply being of importance in the making of the paper board.

Mr. Schaefer: I do not remember that I referred to any letter.

Mr. Garipey: Oh, yes, you did.

Mr. Schaefer: The record will show if I did. If you are willing to rely on that identification, it is all right with me.

Mr. Garipey: Q. Doctor, was not that an address at a convention in Syracuse, the Empire State convention, held there?

A. Counsel referred to a manuscript.

Q. Then that manuscript that was prepared in connection with that convention, was that in connection with the manufacturing of paper board made out of virgin spruce pulp?

A. No. They were manufacturers of miscellaneous 283 papers.

Q. And by miscellaneous papers, what do you mean, in regard to the pulp in question in this lawsuit?

A. I mean that the representatives present were makers of various types of pulp and paper differing from the type in front of me.

Q. Differing in quality and texture and sanitary aspects?

A. Differing in general characteristics.

Q. Will ink spots show up on a paper board made of used containers and of material used once and delivered to the consumer?

A. Yes.

Q. And how will they show up? Explain that to the Master.

A. Ink spots and the other materials that go along with ink, such as matter present in a reused, old container, show up in the form of spots, some of which are ink and foreign fibre and discoloration.

The Master: Q. Show up where?

A. You can tell by looking at this. This is not a good example, because it is paraffined. But a flat piece of paper board would show it. An old board that might have been

used on. Instead of a nice white surface it would show spots of ink.

284 Q. You mean, if they should take some of this board and try to rework it into new board; is that what you mean?

A. Yes, or any other type of old container boards, such as breakfast food cartons.

Q. Unless they would take the outer layer containing the ink off before using that?

A. Yes, because most of it is due to ink.

Q. I mean, yesterday you thought or you said that the ink attaches only to the outer layer.

A. The outer layer, yes.

Q. And if they should take off the outer layer and then use the rest of the paper container in reworking, there wouldn't be any ink, would there?

A. No. It would be difficult to detect any difference.

Mr. Gariepy: Q. Is that feasible to do, Dr. Sanborn?

A. No.

Q. The letter I had referred to and described as the Syracuse incident is Defendant's Exhibit 2, which I show you here photostated. Is that the letter, Doctor?

A. Yes, that is a manuscript.

Q. Doctor, is it feasible, in your opinion, to strip the paper down, as the Master just asked you about, take 285 off the outer layer containing the ink, and using the inner layer, which you say the ink did not penetrate?

A. It is not feasible.

Q. Why not?

A. It is not economically feasible.

Q. Has your investigation and research work at the Cherry River Paper Company ever revealed to you any instance where spores were brought into the mill by the employees?

A. No.

The Master: What are spores?

Mr. Gariepy: Q. Explain to the Master what that is.

A. I mentioned that yesterday. Spores are similar to seeds. They are produced in fungi and are means of reproduction.

Q. Seed growth?

A. Yes.

Q. Doctor, have you found a condition of slime supply or built up slime in your examination of the Cherry River pulp mill during the past two years?

A. No.

Q. Have you looked for such a condition?

A. Yes.

Q. Have you found any condition of polluted water supply at the Cherry River mill in question?

286 A. No.

Q. Have you looked for it?

A. Yes.

Q. Have you ever found, seen or observed about The Cherry River Paper Company in all of your experience and observation there any decomposed paper or moulded wood?

A. No.

Q. Have you had any occasion to complain of a purported slime supply at the Cherry River mill?

A. No.

Q. Have you performed any tests on Plaintiff's Exhibit 2, the paper container, for absorption?

A. Yes.

Q. When and where?

A. These experiments on absorption are running along now and is a continuous experiment running through the year.

Q. What did you find concerning absorption, after, we will say, ten hours, of the paper containing milk? What absorption did you find?

A. The average absorption was found to be in two or three centimeters in the surface fibre of the interior of the container.

Q. And there are 946 cubic centimeters in a quart bottle?

A. Yes.

Q. Have you ever had any objection raised by public health officials of cities and villages or public health departments concerning that amount of absorption in the container in question?

A. No.

Mr. Schaefer: That is objected to as completely immaterial, and I move to strike the answer.

The Master: I will let it stand.

Mr. Gariepy: Q. What problems of mill sanitation did you find existing at the Cherry River Paper Company at the time of your respective visits? Take the last one, in February, 1939.

A. I made several suggestions.

Q. Were they followed out?

A. Yes.

Q. Are they in force and carried out today?

A. Yes.

Q. Was white water ever used at the Cherry River Paper Company mill?

A. The Cherry River Paper Company mill may use a small amount of white water.

Q. And is that, in your opinion, dangerous to the finished product?

A. No.

Q. For what reason, Doctor?

A. Because they chemically treat it and render it sterile.

The Master: Q. What is chemically treated? The white water?

288 A. Yes.

Mr. Gariepy: Q. With regard to the calendar stacks, did you ever find any lime accumulation about the calendar stacks of the mill in question?

A. No.

Q. Or at the water boxes?

A. No.

Q. Explain to the Master where the calendar stacks are at the machinery in the mill?

A. The calendar stacks are after the sheet has been formed, it has got a rough surface. It then goes to be ironed out, as a housewife irons a white dress, sprinkles it with water and gives it a gloss, in the same way the sheet receives a gloss, by being ironed out and treated with water and then is run through a calendar or metal roll, to give it such a gloss. The water boxes are receptacles wherein the water is transferred to the sheets.

Q. Has that any effect on the water-proofing?

A. No.

Q. When this paper board is finished and before any paraffin is applied, it has a certain condition called sizing, does it?

A. Yes.

Q. Is it a water-proof or non-moisture-proof condition?

A. Sizing is a water-proofing treatment.

289 Q. And is that commonly done on all paper board turned out at this plant?

A. It is commonly done.

Q. And is it in vogue at all places where virgin spruce pulp is used for the making of paper board?

A. It is generally used in all mills.

Q. Would you say, in your opinion, that this paper then is substantially water-proofed before the paraffining and after it has come out of the roll with the sizing?

A. It is substantially water-proofed to the extent of being water-repellent and will contain satisfactorily liquids or semi-liquids for a certain length of time.

Q. You were asked something about this, Doctor. Will you say, Doctor, supposing milk is delivered at seven o'clock in the morning, how long it would retain that condition of water-proofing?

A. In such a container that was not coated with paraffin?

Q. Yes, unparaffined container.

A. I have done no experiments on that. It would be my opinion that I would express.

Q. What is your opinion?

A. I have seen the thing done under practical conditions. I have seen milk delivered in such a container, 290 delivered in such a container, and my opinion is, from my knowledge of that condition, that it would probably be in fit condition for a half a day or more, perhaps 24 hours.

The Master: Q. That would be the condition of the milk or the container?

A. The container.

Mr. Schaefer: That answer was not responsive, if the Master please.

Mr. Gariepy: A half a day is the answer.

Mr. Schaefer: The question was whether or not there would be absorption. The answer was whether the container would be in fit condition.

The Master: Q. Would there be any absorption in a half a day?

A. There would be absorption. I understood the purpose of the question was to find whether there might be failure of the container so it would no longer be a satisfactory receptacle for holding milk.

Mr. Schaefer: You mean collapsed?

The Witness: Yes.

Mr. Gariepy: Q. Did you ever find any condition of collapse after a half a day or a full day of such a container so used?

A. No.

291 The Master: Q. But there is the absorption?

A. There is a gradual sinking in.

Q. That is, after the paraffin?

A. No, this is before the paraffin.

Q. I mean, would that condition exist even though there is paraffin?

A. No. If it is paraffined there would be no penetration of milk into the container.

Q. None at all?

A. If properly paraffined, no.

Q. You said something about one cubic centimeter this morning?

A. That is taken up by the outside layer of fibre, that is, the fibre in direct contact with the milk.

Q. Does the paraffin cover those fibres?

A. It would cover the fibres if we got a low enough temperature of paraffin. As I gave my testimony this morning, if the temperature is around 160 to 170, the chances are very good that you are going to leave a surface coating of paraffin over the fibres, but if there should be a high temperature of paraffin some of that might run off, so it would leave an exposed space.

Q. Take this Exhibit No. 2. Does that have some of the fibres that might absorb some of the milk?

292 A. That is undoubtedly there. There would be some fibres in there that would be exposed.

Mr. Gariepy: Q. What amount of absorption, Doctor, have you found, in your experience in the trade, and in your research work, is accepted as satisfactory to the industry in the sale of milk in these containers?

Mr. Schaefer: That is objected to. What is acceptable to the industry is of no interest here.

Mr. Gariepy: Well, the City of Chicago is not free from everything, counsel.

The Master: Just a minute. I will sustain the objection.

Mr. Gariepy: Q. Doctor, have you ever had any complaints concerning this amount of absorption, that you have testified to, that was found by any of the cities or villages shown on Exhibit No. 24?

Mr. Schaefer: That is objected to.

The Master: I will sustain the objection.

Mr. Gariepy: Q. Is there any of this absorption, Doc-

tor, that you have found in your tests and research work that is dangerous or detrimental to health?

A. No.

Q. Or to the consumers of milk?

A. No.

Q. Will you tell the Master why it is not dangerous?

A. Because the paper board used is essentially sterile.

293 Q. If it did absorb it, there is nothing to come out?

A. Correct.

Q. No bacteria to come out?

A. Yes.

Q. And whatever is in has been sealed in by the paraffin?

A. Yes.

The Master: Q. If there is paraffin there and there is absorption, does the moisture give vitality to those bacteria, and fertility?

A. That might happen. That might well happen, if there was a sufficient number of organisms.

Q. That is to say, the absorption might increase whatever bacteria already were present in the paper board?

A. But at the temperature at which the container is held when filled with milk, it would prevent any such propagation. Theoretically it is possible for the organisms to grow, but not with the temperature at which it is held. The refrigeration temperature is too low.

Q. At which it is held with milk in it?

A. Yes.

Mr. Garipey: Q. Concerning the growth of any bacteria, would not bacteria grow in a glass bottle, such as Exhibits 26 and 27, if exposed to the heat?

A. Yes.

294 Q. The same as in Exhibit No. 2?

A. Yes.

Q. And it would be in there, if there was anything for it to feed on, just as it would in the paper container?

A. Yes.

Q. If you find this bacteria in there existing at a low temperature, would it be harmful or harmless?

A. Harmless.

Q. Have you in your experience at the Cherry River Paper Company here ever found any use or evidence of use of ground wood pulp or chemically treated pulp for container board?

A. Not for container board, no ground wood. Of course, sulphite pulp is chemical pulp.

Q. What is the quality and is that made by the same process as described on direct examination?

A. Yes.

Mr. Gariepy: Mr. Reporter, will you mark this drinking cup, paper drinking cup, as Exhibit No. 28.

(The paper drinking cup referred to, was thereupon marked by the reporter Plaintiff's Exhibit No. 28 for identification.)

Mr. Gariepy: Q. I show you what purports to be an ordinary paper cup, marked Plaintiff's Exhibit No. 28 295 for identification. Will you look at this Plaintiff's Exhibit 28, which purports to be a drinking cup and tell me what stock or material that is made out of?

A. That appears to be sulphite pulp.

Q. Is that the type of cup that is commonly used at soda fountains and drinking places?

A. Yes.

Q. Where you buy drinks in cities and villages?

A. Yes.

Mr. Schaefer: That is objected to as immaterial.

The Master: Let him answer.

Mr. Gariepy: Q. Is that paraffined?

A. Yes.

Mr. Gariepy: Will you mark this ice cream container Plaintiff's Exhibit No. 29 for identification.

(The ice cream container referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 29 for identification.)

Mr. Gariepy: Q. What about the cap on Exhibit No. 28, is that paraffined, or is that just plain?

A. That has no coating of paraffin.

Q. On the inside?

A. Yes, it is treated with paraffin.

Q. On the inside?

A. Of the cap?

296 Q. Yes.

A. Yes.

Q. Will you look at Exhibit 29, which purports to be an ice cream container, and tell me what kind of stock that is made out of?

A. Prime stock.

Q. And that is the type of container that is commonly

used, as you have observed, throughout the United States, in the sale of ice cream at soda fountains and stores?

A. Yes.

Q. And is that waxed and paraffined?

A. Yes.

Q. Do you find anything detrimental in the use of either of these two containers for the sale of liquids or ice cream?

A. No.

Mr. Schaefer: That is objected to.

The Master: Overruled.

Mr. Gariepy: Q. Is ice cream a milk product?

A. It is a dairy product, yes.

Mr. Gariepy: Mr. Reporter, will you mark this cottage cheese container as Plaintiff's Exhibit No. 30 for identification.

(The container referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 30 for identification.)

297 Mr. Gariepy: Q. Will you look at Exhibit No. 30,

Doctor, which purports to be a cottage cheese container. Have you ever seen those before?

A. Yes.

Q. What type of material is that made out of, with regard to prime stock or secondary stock?

A. It is made out of prime stock.

Q. And is that the type of container that is commonly used throughout the country, as you have observed, for the sale of cottage cheese, at stores and soda fountains and so on?

A. That is the common type.

Q. Is that paraffined?

A. Yes.

Q. Have you any idea from looking at that as to the temperature of the paraffining? Just give your judgment as to what kind of a job that shows. It is paraffined on the inside, too, Doctor.

A. Yes, I know it is. I was trying to see how well. This is a regular laboratory experiment. That was paraffined. I would guess, in my opinion, at approximately 175 or 180 degrees Fahrenheit.

Mr. Gariepy: If the Master please, I picked this up at Walgreen's.

The Master: Q. Would you call that a standard?

A. It is the general type that is encountered in 298 many stores. It varies somewhat in shape.

Q. That is about as standard as the milk bottles?

A. That is right. They vary in shape a little bit. Some are more squatty, and so forth, but it is one of the type you find generally.

Mr. Gariepy: I secured that this morning at Walgreen's, at nine o'clock, if you want to know where it came from.

Mr. Schaefer: I am not interested.

Mr. Gariepy: I know, but if you want to know where it came from. It is from Bowman's, used in the city.

The Master: Do you want that in as evidence?

Mr. Gariepy: No. If there is any question about it, I just want that in.

I am going to offer Exhibits 26, 27, 28, and 29, counsel.

Mr. Schaefer: Where do they belong?

Mr. Gariepy: The big bottle is Exhibit 26, the small bottle is Exhibit 27, and the containers or cups are 28, 29 and 30.

Mr. Schaefer: I have no objection to the admission of Exhibits 26 and 27. I object to the admission of Exhibits 28, 29 and 30, on the ground that they are immaterial.

The Master: Overruled.

299 (The glass and paper containers so offered and received in evidence, as heretofore described, were marked PLAINTIFF'S EXHIBITS 26, 27, 28, 29, and 30, respectively, and are attached hereto and made a part hereof.)

Mr. Gariepy: Mr. Reporter, will you mark this paper container the next exhibit number.

(The paper container referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 31 for identification.)

Mr. Gariepy: Q. Will you look at Plaintiff's Exhibit 31 for identification, Doctor, and tell me whether you have ever seen that before.

A. Yes.

Q. And how often and where?

A. I have seen this container very frequently, or rather frequently, at milk plants, and I have seen it manufactured.

Q. Do you know whether that type of container is in use today?

A. Yes.

Q. In the sale of milk at retail?

A. Yes.

Mr. Schaefer: That is objected to as immaterial.

The Master: Overruled.

Mr. Gariepy: Q. Where, Doctor?

A. It is used at a great many small milk plants 300 throughout the country.

Q. Is it used by Borden's, who purport to own that container or put it out, in the east, in Baltimore?

A. It has been used by Borden's.

The Master: Q. In the east?

A. Is the address, counsel, of the particular branch on here?

Q. What is your recollection as to where you have seen it used?

Mr. Gariepy: Q. Well, do you remember seeing this type of container used in cities and villages?

A. I have seen it used in New York City.

Q. Is this made out of virgin spruce pulp, the same as Plaintiff's Exhibit No. 2?

A. There is virgin spruce pulp in that container, and there is also ground wood, which is prime pulp.

Q. And is it waxed in a similar manner that you described the Ex-Cell-O machine waxed Exhibit No. 2?

A. It is waxed in a similar manner, by spraying. The objective is the same.

Q. And that wax is applied by forced air blowing a spray on it, by machine?

A. Yes.

Mr. Schaefer: If the Master please, I object to that question. That is a type of milk container which is 301 not involved in this litigation.

The Master: You mean this one, Exhibit 31?

Mr. Schaefer: Yes.

The Master: I will let it stand.

Q. I notice that when this exhibit is handled the paraffin comes off.

A. Yes, a little oily surface.

Q. Does not some of that oil get into the milk?

A. I conducted no experiments on that. There is no difference in the taste of the milk.

Q. I just asked you the question. I noticed when I handled this Exhibit 31 some oily substances seemed to cling to the fingers.

A. The heat of the hand undoubtedly is responsible for that.

Q. Just touch it and a little bit of friction gets an oily substance on to the hand. I was wondering if some of that oily substance gets into the milk when there is friction on the inside.

A. There is no indication that has come to me by experimentation or report that takes place.

Mr. Gariepy: Q. Is there anything in that oily substance that the Master has referred to, Doctor, that is dangerous to health?

A. No.

302 Q. Does it change the taste of the milk any? Have you had any experience in that?

A. No, there is no evidence that it changes the taste of the milk.

Mr. Gariepy: I will ask the reporter to mark this large paper container as Plaintiff's Exhibit No. 32 for identification.

(The large paper container referred to was thereupon marked by the reporter Plaintiff's Exhibit No. 32 for identification.)

Mr. Gariepy: Q. Will you look at that, Doctor, and tell the Master what that is?

A. This container is called a bulk can or a fibre can for the wholesale distribution of ice cream.

Q. Of what type of pulp or wood material is that made?

A. This container has a liner of price sulphite stock and it has a filler of high grade inside materials, of the nature of secondary stock.

Q. And how extensive is the use of Exhibit 32, to your knowledge and from your experience?

A. This type of container is used very widely around metropolitan areas in New York City and Boston and Philadelphia.

Q. Is there any health problem involved in the use
303 of that container in the sale of ice cream, with the liner you described?

Mr. Schaefer: That is objected to.

The Master: Overruled.

The Witness: A. No.

Mr. Gariepy: Q. And is the outside of that paraffined?

A. No.

Q. The lining on the outside takes the place of the paraffining?

A. Yes.

Q. And that liner is of prime stock?

A. Yes.

Q. And is that liner of the same quality as Exhibit No. 2?

A. Yes.

Q. In regard to the Master's inquiry, I think, of yesterday, about cutting down Exhibit No. 2 and reusing it, are there other sizes, other than the quart so shown in Exhibit 2?

A. Yes.

Q. Have you ever in your experience in your research work, found any attempt to assimilate Exhibit No. 2 by cutting it down in size and putting on another gable roof?

A. No.

Q. Is that practically possible, Doctor?

A. In my experience, it is practically impossible.

Q. Will you tell the Master why?

304 A. It would be practically impossible, in my experience, to do such a thing without defacing and mutilating the container in such a way that it would not be able to serve its purpose.

Q. Would such an attempt at assimilation or changing the original container be easily observed by the purchaser, consumer or the dealer or whoever may get it?

A. Yes.

Mr. Gariepy: Off the record, please.

(Discussion outside the record.)

Mr. Gariepy: I offer Exhibits Nos. 31 and 32.

Mr. Schaefer: I object.

The Master: They may be received in evidence.

(The paper containers referred to, so offered and received in evidence, were marked PLAINTIFF'S EXHIBITS 31 and 32, respectively, and are attached hereto and made a part hereof.)

Mr. Gariepy: Q. Are you acquainted, Doctor, with the matter of adhesive or glue that is used to seal the bottom of this Exhibit 2 here?

A. Yes.

Q. And what is the chemical constituent of the said glue or adhesive?

A. Those adhesives are either starchy in nature
305 or contain casein, and a certain chemical reaction set up, and then a preservative is added.

The Master: We went into this thing yesterday. No question was raised about it on cross examination.

Mr. Schaefer: Not that I recall.

Mr. Gariepy: All right, I will withdraw it. It may be physically stricken, as far as I am concerned, Master.

The Master: Well, leave it in there.

306 Q. Doctor, how many years has the paper container, as testified to here by you, the virgin spruce pulp, been in use that you know of in other cities and villages; what is the earliest date?

Mr. Schaefer: That is objected to on the ground that there was direct testimony to that effect and the matter was not broached on cross-examination.

Mr. Gariepy: I don't remember.

Q. What time did you say, Doctor,—was it 1906?

A. Yes, sir.

Q. Has there been, in your experience and in your observation any advancement in perfecting the type of material, since 1906, used in turning out finished products such as Plaintiff's Exhibit 2?

A. Yes, sir.

Q. In what way?

A. In the matter of bacteriacidal control and in the matter of bacteriological control; that is the greatest development so far as the quality of material is concerned.

Q. Doctor, do you know of any rule or regulation of the United States Public Health Service with regard to the quality of the paperboard used in single service containers?

A. No.

307 Q. Has the United States Public Health Service spoken on said subject?

A. No.

Q. Does the city of Washington, D. C., where the United States Public Health Service is located, use the single service paper container?

A. Yes.

Q. Do you know the officials of the United States Public Health Service, Dr. Parran?

Mr. Schaefer: That is objected to as immaterial. What is the reason for it?

The Master: Read the question.

(The question was read by the reporter.)

Mr. Schaefer: What if he knows or doesn't know? What is the materiality of it?

Mr. Gariepy: That he is not talking about something in theory and as to the rules and regulations and so forth if he knows them, and he knows the man that dictates their policy and standards, if he knows or doesn't know.

The Master: He knows—go ahead.

Mr. Gariepy: Q. You do know?

A. Yes.

Q. What are the purposes of mill sanitary surveys or inspections, Doctor?

308 A. The purpose of mill sanitary surveys or inspections are twofold: First, to investigate the sources of contamination of a mill in order to aid that mill in making certain economic savings; and, secondly, to inspect that mill for the purpose of improving the sanitary condition of their product.

Q. How often have you made such inspections and do you make such inspections for municipalities permitting the use of the single service container?

Mr. Schaefer: That is objected to.

The Master: Overruled.

Mr. Schaefer: Sir?

The Master: Overruled.

Mr. Schaefer: But I object to the form of that question.

Mr. Gariepy: For municipalities.

The Master: What is wrong with that question?

Mr. Schaefer: Does he make any? It is evidently leading.

The Master: I overruled the objection. He makes them or he doesn't.

Mr. Gariepy: That is right.

Q. If you don't make them, you can say so.

A. I make inspections more or less regularly.

Q. Do you mean quarterly or semi-annually?

309 A. I usually make inspections when I consider them necessary.

Mr. Schaefer: Q. Those are for municipalities, in response to the question asked?

A. Indirectly I am not sent there by the municipalities but in any case, or in many cases, the municipality asks me subsequently what I found.

Mr. Gariepy: Q. And do you report to them?

A. I report to them, when I receive the permission of the mill in the instance, that one in question, as that ma-

terial is confidential and I would not divulge that without the permission of the mill.

The Master: Q. Who asks you to go in there—the mill?

A. The work being authorized by the Department of Health, yes; that is part of my work.

Q. Why is it confidential with the mill?

A. Concerning things I observe that may have to do with policies and practices that are characteristic of the secret to the mill in question.

Q. I want to get this right. You are asked by a municipality to make an inspection?

A. Yes, sir.

Q. And theoretically, at least, you are doing that work for the municipality?

A. Yes.

310 Q. And why shouldn't you convey to the municipality the results of your investigation?

A. I am sorry I did not make that quite clear, Master. I report everything to the health authority having to do with the sanitation or the public health aspects of that mill, but in the course of our work there are other points which are not bearing on public health which I, of course, do not divulge. I did not make it very clear, I appreciate.

Mr. Gariepy: Q. Will you give us some examples in your experience when that has been done by you and is being done?

Mr. Schaefer: That is objected to.

The Master: I will let him answer. You may answer it if you want to.

Mr. Gariepy: Q. My point is to bring out anything that you consider confidential and things that you consider the Health Department of the city or village should know about.

A. I see. I go to a mill to make a survey and make bacteriological counts throughout the system, of the water supply, of the stock at focal points throughout the system and of the final product. I make inspection of the mill to see that the general sanitation is satisfactory.

311 I observe, in the course of my visit to the mill, that they have a very satisfactory way of achieving sterility, or a new or a different method of bacteriacide control. In making my report to the health officials. I report the sanitary conditions as I found they were with reference to the method of achieving a certain goal.

The Master: Q. Who pays you for this work?

A. In the case of that mill, I get my traveling expenses plus hotel bill.

Q. From whom?

A. From the mill that receives the survey.

Q. Isn't this survey made at the request of the city, for its own police purposes?

A. No, it is not that understanding. It hasn't gone that far. My understanding has not gone that far. The work is authorized by the Health Department but it is research information that we are accumulating and the real purpose of the survey is to tell the mill what it must do, what it should do in order to make a satisfactory product.

Q. Who asks you to go there, the mill, in the first instance, or the city?

A. The mill, in the first instance, asks me to go.

Q. Then why do you have to see the city about it?

312 A. I don't have to see the city about it unless I am requested for a report, which often happens, by the city, as to what I found.

Q. Why do you use the expression "authorized"?

A. Authorized is the proper term for explaining my original relationship to the Health Department in the investigation I have been conducting; it has been authorized by the Department of Health of New York City and the Department of Health of New York State for the purpose of securing information and research data on the subject of sanitation of paper containers for it.

Mr. Gariepy: Q. In these reports and investigations are you given any compensation as to whether your reports are favorable or unfavorable to the mill?

A. No.

Q. Do you receive any remuneration concerning the type of report?

A. No, sir.

Q. Does the type of report depend on whether your fare is paid or your expenses are paid?

A. No, sir.

Q. Such things as you obtain in the investigation of these mills and research, is that public information for any health department that writes you about that mill?

A. It is open for the inspection of the health au-
313 thorities so far as sanitation is concerned.

Q. Can the condition of paperboard be indexed as

to its sanitary condition, that is, sanitary condition of the mill?

A. Paperboard may be a sanitary index of the mill, or, rather, an index of the sanitary condition of the mill.

Q. Is a survey needed in order for that to be brought out?

A. Not necessarily.

Q. Counsel asked you this morning, quoting that I purported to testify as to disintegration tests. I was not attempting to testify, Doctor. Did you explain in detail that disintegration test of paper and the reasons for it?

A. Yes, I did.

Mr. Gariepy: Mr. Schaefer read it this morning and stated that Mr. Gariepy said disintegration was so and so, and I said I was trying to give the witness words to reframe it, but I was not testifying and I didn't want you to think I was trying to tell you what the testimony should be on that.

You may recross, Counsel, if you want to, before we go into this matter on the details.

The Master: Let's finish with the witness first.

Mr. Schaefer: Is that all of the redirect, Mr. Gariepy?

314 Mr. Gariepy: Yes.

Recross Examination by Mr. Schaefer.

Q. Doctor, I understood you to say that, to determine whether or not a mill is adhering to a program of microbiological control, some effort in addition to the effort required in making disintegration tests was necessary?

A. That is very often true, if I might enlarge upon that a bit, Master. Referring to the mill we have been discussing, as long as the matter goes on in the way it has been preceding, and the count continues to be satisfactory, I don't consider it necessary to make inspections of that mill.

Q. Ever?

A. Unless some emergency arises; unless there should suddenly be some emergency arise or some reason, and then I want to go there and make a personal investigation.

Q. During your cross-examination this morning, Doctor, I showed you the second row of milk containers on exhibit, Plaintiff's No. 13?

A. Yes.

Q. You testified that those were in your opinion cups?

A. Yes.

315 Q. Do you want to change that testimony?

A. Yes, Master. I have been thinking so long in terms of paper that when I see a thing of that shape I state "paper cup." I mean it has the appearance of a tumbler.

Q. You testified a moment ago that white water could not contain pathogenic bacteria under normal conditions?

A. Yes.

Q. If pathogenic bacteria were present in white water, would they survive?

A. Pathogenic bacteria present in white water would not survive white water.

Q. Why is that, Doctor?

A. In the first place, the acid content of the white water is so great that it would be detrimental for proliferation; the environment is unsuitable for pathogenic bacteria.

Q. Will they die in white water or continue to live?

A. Pathogenic bacteria will die in white water.

Q. You spoke of some suggestions that you made with respect to sanitation in the Cherry River mill in February of 1939. What were those, Doctor?

A. The date perhaps is immaterial.

316 Q. Perhaps the date is wrong, but it was your last inspection?

A. Yes. Will you read that question, please?

(The question was read by the reporter.)

A. I suggested an increase in the chlorination setup of the residual chlorine. I made sanitary suggestions concerning the water box sanitation and I made sanitary suggestions concerning the mechanical handling of the finished paper.

Q. As opposed to what, manual handling?

A. As opposed to manual handling.

Q. What is sizing, Doctor?

A. Sizing is a resin treatment; there is a suspension of resin which is added to the pulp and with the addition of alum for the purpose of producing on the paper a resinate, and the resin acts as a moisture proofing agent.

Q. That is the only purpose of adding sizing?

A. Not only that, but it enables you to write on the sheet; if there was no sizing on it, you couldn't write on it,

and it can be written on and you can use it without collapsing.

Q. Doctor, with respect to Plaintiff's Exhibit 2, do you find the same, after handling that exhibit, the same oily feeling on your fingers that you found after you handled 317 Plaintiff's Exhibit 31?

A. Will you read the question, please?

(The question was read by the reporter.)

A. Yes.

Mr. Schaefer: That is all, Master.

Mr. Rall: Is there anything deleterious to help in that oily substance?

The Witness: No.

Mr. Gariepy: I will ask that these sheets be marked as Plaintiff's Exhibit 32 for identification.

The Master: It may be so marked.

(The document, containing several sheets, referred to was thereupon marked by the Reporter "Plaintiff's Exhibit No. 32 for identification.")

Mr. Gariepy: May we proceed now with regard to this matter of these tests?

Mr. Schaefer: Are you through with the examination for the purpose of this case?

Mr. Gariepy: Dr. Sanborn?

Mr. Schaefer: Direct, cross, and redirect—is there anything further?

Mr. Rall: Maybe.

Mr. Schaefer: Let's finish with him.

Mr. Rall: This is part of it, then.

318 The Master: We will take a recess, gentlemen.

(A recess was taken.)

Mr. Schaefer: There is one more question I would like to ask the witness which I forgot:

Q. Doctor, when you examined this Plaintiff's Exhibit 31 at the request of Mr. Gariepy, I noticed that you picked it up and smelled it once or twice. Why did you do that?

A. That is a mechanical operation I go through in examining containers of any kind; when I have a specimen to look at, I usually go through a certain number of procedures such as that.

Q. Why did you smell it?

A. To see if I can detect any odor.

Q. What would the presence or the absence of odor indicate to you, Doctor?

A. By the type of odor I detect I might be able to

arrive at the reason for it. The reason why—and now I recall—excuse me, Master, but it rather took me by surprise; I didn't remember I had done it when it was mentioned because it is an automatic process to me. I do recall that I did so.

The paraffin might have been overheated and on certain containers the paraffin is heated too hot and if it is heated too hot they are likely to detect certain products of 319 decomposition due to overheating.

Q. What temperature range will produce those products of decomposition?

A. I can give no definite answer to that, as to the temperature that might cause it.

Q. Can you give some temperatures that are certain?

A. Not only the temperature but the renewal of the paraffin is a factor there. If it is renewed, there will be less chance, even at high temperatures of heating any such off color. It is accompanied by a change in color as well as odor; it is a sign of breakdown, so that the renewal of the paraffin has an effect, if the paraffin bath—

Q. Excuse me. Let's see if I am clear: If you recoat that paraffin, you will cover the odor?

A. No.

Q. What do you mean by renewal of paraffin?

A. By changing the paraffin in the bath, cleaning the tank out and putting the thing through a spraying process, and you cannot detect any possible breakdown, but if you allow it to go two or three weeks and don't change it, it becomes in that condition and—

Q. That is in addition to the temperature?

A. Yes, sir.

320 Mr. Schaefer: That is all.

Mr. Gariepy: Q. Doctor, you noticed the quart bottle, Exhibit 27, which had the hood on it?

A. Yes.

Q. Did you notice any milk oozing out of the top of this?

A. Yes.

Q. Will you look at the table before you?

A. Yes, sir.

Q. Where does that milk come from?

Mr. Schaefer: I object to that.

Mr. Gariepy: That was sweating when we were right here, pouring out of the top.

The Master: I think we opened up one of those covers.

Mr. Gariepy: No. It was sweating and the milk running out on the table. I want to show the fact.

Q. Have you ever seen in Defendant's Exhibit 2 any milk gozing out of the top there?

A. No.

Q. With regard to this matter of these tests—

Mr. Schaefer: Just a minute, before we get into that, if the Master please. As I understand it, the matter of these tests is now before you for your ruling. If you think it is going to assist you to have the witness answer questions pertaining to these tests, I have no objection. I 321 don't believe that any record made pretaining to these tests should be a part of the record in this case or a part of the deposition because it don't tend to prove any issue in the case; but if you want to hear the testimony of this witness pertaining to that, if you want the reporter to take it, if the Master wants it.

The Master: This testimony is merely by way of anticipating the possibility that if the agreed inspections or experiments are not had and the city determines or decides to go ahead and conduct the experiment by itself, then this witness' testimony, conceivably, may be of some materiality.

Mr. Rall: That is correct, and if we reach an agreement, I don't see that there will be any need to write it up or put it in the record.

The Master: It may not be necessary to have it in unless you reach an agreement.

Mr. Rall: That is correct.

The Master: I don't see any use speculating as to whether they are going to do it or not. The testimony at the present time meets no issue, then.

Mr. Rall: That is right. That is my point.

The Master: And Mr. Rall thought the testimony might be taken down just as a matter of convenience but not 322 written up and possibly stricken out physically from the stenographer's notes as not being a part of the record.

I cannot see any objection in letting the stenographer practice.

(The testimony above referred to was physically stricken from the record.)

(Thereupon, the further hearing of the within cause was continued until 10 o'clock a. m. on the 5th day of June, 1939.)

323

• • (Caption) • •

Monday, June 5, 1939.
10 o'clock a. m.

Met, pursuant to adjournment.

Present:

Mr. Gariepy,
Mr. Rall.
Mr. Schaefer,
Mr. Horan.

324 The Master: Are you ready to proceed?

Mr. Gariepy: Yes.

The Master: Off the record.

(Discussion had off the record.)

Mr. Schaefer: Let us have the record show, if the Master please, that the defendants' right to cross-examine the witnesses is reserved and that the witnesses will be brought back for cross-examination at a future date.

Mr. Gariepy: Very well.

Mr. Rall: That is agreeable.

Mr. Gariepy: I will call Mr. Fisher.

HARRY C. FISHER was called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. State your name?

A. Harry C. Fisher.

Q. Where do you live?

A. 6208 Beachview Circle, Cincinnati, Ohio.

Q. What is your business or occupation?

A. Chief chemist of the Gardner-Richardson Company in Middletown, Ohio.

325 Q. Of what schools are you a graduate?

A. I graduated from the University of Cincinnati in 1923, with the degree of Chemical Engineer.

Q. Any other school?

A. No, sir.

Q. What work have you been engaged in since your graduation in 1923?

A. Since that time I have been employed by the Gardner and Richardson people in their laboratories. Since about 1927 or 1928 I have been the chief chemist of the company.

Q. And what is your duties as chief chemist at the laboratories of the Gardner-Richardson Company at Middletown, Ohio?

A. As Chief Chemist I am responsible for testing raw materials, finished products, investigating processes, research developments and things like that.

Q. What do the Gardner-Richardson people make that you test and examine?

A. Among other things, the Gardner-Richardson people convert milk bottle board or so-called milk bottle board paper into the paper milk bottle.

Q. Have they what is called or what is known in the trade as a converting plant?

A. Yes.

326 Q. And are you connected with that converting plant?

A. Yes.

Q. And where is the laboratory that you work out of in connection with that plant?

A. Our main laboratory is at Lockland, Ohio, which is about 25 miles from Middletown. We also have laboratories in Middletown, too. They are scattered around.

Q. How long have the Gardner-Richardson people maintained these laboratories; first, the one in Lockland?

A. Since before I worked there. That is, before 1923 they had laboratories. Also they have had them in Middletown. I should explain this: That the Gardner-Richardson Company is a comparatively recently formed concern, of 1932, made of two parts, the old Richardson Company, whose paper business was purchased by the Gardner-Harvey Company, who are also paper manufacturers, converters. They were both in the same line of business and one bought out the other and formed this new company, so that up to 1932, I was with the Richardson Company, and from 1932 on with the Gardner-Richardson Company, working in the same laboratory.

Q. How many tons of paper a day do they convert 327 or fabricate?

A. I imagine they do about 1500 to 2,000 tons a week; something like that.

The Master: Q. What do you mean, that they convert?

A. Well, in the paper industry there are two operations. One is to make the paper in the form of sheets or rolls, and the second is to take that paper, convert it into something like these milk bottles would be, by the processes of printing, cutting, scoring, gluing and so on.

Mr. Gariepy: Q. Do you make any of this virgin spruce pulp paper board material that was testified to here by Dr. Sanborn last week?

A. We have not made any of this particular board, no.

Q. How long have you had the laboratory at the Middletown plant, how many years has that been set up in operation?

A. That has been in operation before 1932, many years.

Q. Have you set up a new laboratory in the last two months for the purpose of testing and making tests and doing research work on the paper board in question here?

A. Yes; within the last couple of months we have
328 set up a department specifically for bacteriological work of the simpler kind, on this particular board.

Q. Who is the head of that department?

A. The work is done under my direction by one of the men.

The Master: I might ask a question there.

Q. Just why are you interested in bacteriological experiments on paper that has already been manufactured by somebody else?

A. Well, it comes under the heading of testing of material which comes to us to be converted. In other words, we want to be sure that when the person who sends it to us says it is o. k. for this kind of work, that that is true. It is part of the routine testing. The other man's finished product now becomes our raw material, and we have to test the raw material that we use, so to speak.

Q. Do you buy this paper from the other people?

A. We buy the paper, go through the processes like converting them into the bottle, not paraffined, or the blank, I should say. It is not even formed up into that shape. Then we sell it to the dairy people.

Q. That is, you buy it from the paper people?

A. Yes.

Q. And when the paper people sell it to you, they
329 don't care what you do with it.

A. Well, they know what we are going to do with it, so they can make it to specifications, of course, but it becomes our property, you might say.

The Master: I understand.

Mr. Gariepy: Q. How often do you perform tests on the paper board that you purchase from the Cherry River Paper Company to convert into paper for milk containers?

A. Our tests on that are of two kinds, one being the physical qualities of it, for strength and what not, and the other the simpler bacteriological tests. We do two things. One is to test each lot of board received and also to test representative samples of the finished blanks as we send them out.

Q. How often are those tests made, was my question, Mr. Fisher?

A. Whenever a lot of board is received—

Q. No, Mr. Fisher. Is it daily, weekly, monthly, yearly? Let us get down to the fact. How often do you perform these tests on this board at your plant?

A. The board is received. It comes in at certain times. Whenever that is we test that board. In addition, we test each day upon the finished containers.

Mr. Gariepy: Mr. Reporter, will you mark these 330 photographs Plaintiff's Exhibits 33 to 38, both inclusive, for identification.

(The photographs of processes, equipment and products at the Gardner-Richardson plant referred to were there-upon marked by the reporter Plaintiff's Exhibits 33 to 38, both inclusive, for identification.)

Mr. Gariepy: Q. Mr. Witness, I show you what purports to be a photograph marked Plaintiff's Exhibit 33 for identification and ask you if you ever saw that before?

A. Yes.

Q. When and where?

A. It is a picture taken of a typical load of paper being fed into a printing press.

Q. When was that picture taken, and where?

A. Saturday morning last, at Middletown, Ohio.

Q. And what sort of paper board is that white sheet that appears there; what quality of paper board is that?

A. That is the Cherry River milkbottle paper.

Q. What kind of a machine is that board being held into?

A. It is an automatic feeder on a printing press.

Q. Is that the size in which the board is received or 331 purchased by your people from the Cherry River Paper Company?

A. Yes.

Q. And how many hands touch that board from the

time it is inserted into that machine until the time it gets to the fabrication processes?

A. There are no hands touch it going through the machine.

Mr. Gariepy: I offer that in evidence as Plaintiff's Exhibit 33.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph showing typical load of paper being fed into printing press so offered and received in evidence was marked PLAINTIFF'S EXHIBIT 33, and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. I show you Exhibit No. 34 for identification. Will you tell the Master what that picture shows, where it was taken, and when?

A. This is a picture taken last Saturday morning in the converting plant of Gardner-Richardson at Middletown, showing a pile of printed, cut, scored, creased milk bottle blanks as they are prepared and ready to be fed into a gluing machine, where the blank is folded to glue the 332 vertical seams.

Q. Is that the same type of board as is used in the Defendants' Exhibit No. 2 here, that carton, finished carton that we had?

A. Yes, sir.

Mr. Gariepy: I offer that in evidence as Plaintiff's Exhibit 34.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph showing pile of printed, cut, scored and creased milk bottle blanks, ready to be fed into gluing machine, so offered and received in evidence, was marked PLAINTIFF'S EXHIBIT 34, and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. I show you Plaintiff's Exhibit No. 35 for identification. Will you tell me what that picture shows and when and where it was taken?

A. This is a picture of a flat, as we term it, or pile of the milk bottle board, as we receive it from the Cherry River Paper Company, where it is piled upon a wooden flat or skid, wrapped completely over the entire pile with clean water-proof paper, which in this picture has been torn aside to show the piled sheets.

333 Q. Who tore it aside?

A. Well, it was torn by one of the men when the picture was taken.

Q. At your request?

A. Yes, sir.

Q. To show the contents?

A. Yes, sir. It shows, further, how the load is banded down and strapped between wooden top and bottom to hold it in place. There are 3,000 sheets of paper in this pile.

Mr. Gariepy: I offer that in evidence as Plaintiff's Exhibit No. 35.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph of flat or pile of milk bottle board so offered and received in evidence was marked PLAINTIFF'S EXHIBIT NO. 35, and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. I show you Plaintiff's Exhibit No. 36 for identification. What does that picture show?

A. This picture shows the way in which a pile of blanks ready for the gluing machine is wrapped around with good, clean kraft paper to keep any dirt or anything getting onto it while it is waiting to be put through the gluing machine.

Mr. Schaefer: I don't hear you. What was that?
334 The Witness: While they are waiting to put it through the gluing machine. In particular, it is the same pile that was shown in the other exhibit.

Mr. Gariepy: Q. That is, Exhibit 34?

A. Yes, sir.

Q. Is that the usual, daily practice with regard to these piles of paper as they are received, waiting to be put through the gluing machine?

A. Yes.

Q. Is there any other object served other than to keep it from contamination, from touching?

A. That is the only object.

Q. In wrapping it up with paper while it is waiting?

A. Yes, sir.

Mr. Gariepy: I offer Exhibit No. 36 in evidence.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph showing pile of blanks ready for gluing machine so offered and received in evidence, was marked PLAINTIFF'S EXHIBIT NO. 36 and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. Exhibit No. 37, what does that show;
Mr. Witness?

335 A. This shows a pile of the printed sheets of paper.

After they come from the printing press, they are wrapped with clean Kraft paper to protect them from any dirt or dust that might blow around and while they are waiting to be put through the cutting and scoring press.

Q. Is that the usual, daily routine and practice in the handling of that paper board?

A. Yes, sir.

Q. And was that torn open by you?

A. That was torn open to show the pile of paper therein.

Q. Just before the picture was taken?

A. Yes, sir.

Q. Was that taken last Saturday?

A. Yes, sir.

Mr. Gariepy: I offer Exhibit No. 37 in evidence.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph showing pile of printed sheets of paper board so offered and received in evidence was marked PLAINTIFF'S EXHIBIT NO. 37 and is attached hereto and made a part hereof.)

336 Mr. Gariepy: Q. Exhibit No. 38, will you tell the Master what that shows?

A. This picture is of a shipping container full of the flat completed milk bottle blanks as they are shipped to our customer, who uses them in a dairy. It shows, moreover, by illustration, how a small piece of kraft paper is wrapped around each fifty blanks or so in order that they may be pulled from the container with ease.

Q. Is that the customary practice in containers used in shipping fabricated milk containers to dealers?

A. Yes, sir. I might add that sometimes they use a little piece of paper board instead of the strip of paper.

The Master: Q. For what?

A. To help pull the pile apart and get the containers.

Mr. Gariepy: I offer Plaintiff's Exhibit No. 38 in evidence.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said photograph showing container completed milk bottle blanks as shipped so offered and received in evidence,

was marked PLAINTIFF'S EXHIBIT NO. 38 and is attached hereto and made a part hereof.)

337 Mr. Gariepy: Q. Mr. Witness, will you describe what this paper is? Take one sheet, of which I show you a copy, which is printed on one side, and tell what process it goes through in the steps of manufacturing of the product itself.

A. This top sheet is the original board as received from the Cherry River Paper Company. The bottom sheet shows the sheet after it has been printed, cut and scored by press operation, but before the operation we term scrapping.

Q. Describe what you mean by scoring, Mr. Fisher.

A. The process of scoring is one in which the sheets of printed stock, which in this instance may have about fifteen or seventeen carton blanks, with printing on them, is fed into a press, which is equipped with scoring knives or rules, and they cut out the shape of the blank and also score such portions which later are bent when the bottle is formed into shape, and as the sheets, cut and scored, issue from this so-called scoring press they form into a pile, and later these tabs are knocked off, to let the final form of the blanks remain.

Q. Will you look at this, which purports to be a part of the section scored in the scoring operation, taken from 338 one of these big sheets, and tell where manual handling or manual service comes into play in connection with the handling of these, after the glue is put on.

The Master: Off the record a minute.

(Discussion off the record.)

Mr. Gariepy: Q. I show you, then, a finished blank, which purports to be a section taken from a large sheet after it is scored, is that right, Mr. Fisher?

A. Yes, sir.

Q. And will you tell the Master where the manual handling of this thing comes into play, with regard to fitting it for the gluing?

A. As these sheets of cut and scored material, such as this, issue from the cutting and scoring press, they fold themselves together, to the extent that a large pile of them folds up in the receiving bin of this press, and the men, who incidentally are dressed in white, examined medically and so on—

Q. How often are they examined medically?

A. The nurse examines them and checks up on them daily.

Q. What sort of an examination is that?

A. The daily examination is one to see whether
339 there are any troubles with the skin and so on, and that they are clean and things of that nature. Of course, when the men are hired they are given a complete examination from the beginning by the medical department.

Q. Is this a daily examination of employees who come in touch with this material?

A. A daily examination for general cleanliness, yes.

Q. How many nurses and doctors do you have on the ground there performing examinations and testing the employees daily?

A. We have a completely equipped hospital with one fulltime registered nurse, and then there is a company doctor who is called at any time.

Q. For the purpose of aiding in the examinations?

A. This is part of his work. Of course, they are there for other duties too.

Q. Is that customary, routine, daily in the plant?

A. Yes.

The Master: Q. What is this routine you are talking about? Now, you have got a great big sheet which has been cut into pieces. The pieces are not taken out of their relative position in that big sheet. They seem to have some attachment so that they remain in the same position
340 they were, that is, the pieces of paper containing the impressions are still in the sheet?

A. Yes.

Q. How do you get them out of the sheet?

A. These sheets pile up on a table at the end of the cutting press.

Q. What are you talking about? The big sheets?

A. The big sheets that are cut and scored, but still hung together.

Q. Yes.

A. These sheets here.

Q. Yes.

A. You will note the end of this sheet has a piece on it, which is later cut off.

Q. Yes.

A. The men grab as many sheets as will form a pile. At each end there is a number of men and they slip that over

onto the table and take some hammers and they knock all of those tabs apart, such as this. Those things knock out a large number at a time.

Q. Do you mean they can knock a whole set of them out?

A. Yes, sir, they will knock a pile, say, three or four inches high.

Q. What do they do? Knock them into a container of some kind?

A. They knock them onto the floor, and that is no longer a part of the milk bottle process. It is rejected.

Q. They knock what on the floor?

A. They knock out the cut-outs.

Q. Do they knock this out or the other part?

A. They knock out all of the cut out portions around this and it leaves these in the pile.

Q. That is what I am talking about. They knock out the outer border?

A. Yes, sir.

Q. Which does not form a part of the portions which will later form the container?

A. Yes.

Q. And that leaves on the table, or whatever you have it on, merely these cut-outs?

A. A pile of these, or a number of these cut-outs corresponding to the position of these sheets on there or these blanks in the sheets.

The next operation is to grasp a pile of them and build them up to a convenient height, which might be a foot or a foot and a half, something like that, and by means of a wire brush all fragments which remain on the edges are knocked off.

Following that operation the piles are transferred to a flat of board, a skid, so to speak, which is covered with a clean sheet of milk bottle board, which forms a pile about three or four feet high, as shown in one of these pictures you have.

Immediately thereafter a pile of these blanks is wrapped with the kraft paper or other paper, so that it remains out of the direct air, and it is fed into the gluing machine.

Q. When it gets to the gluing machine, what type of glue is used for the gluing of this blank?

A. The glue we used is called a Pure-Pak glue. It comes from the Arabol Company of Cicero, Illinois.

Q. And what are the chemical constituents of that glue that is used at the Gardner-Richardson plant on this paper?

A. It is a vegetable glue. I have not analyzed it. It is one that is specified we should use.

Q. Specified by whom?

A. Apparently by the milk bottle people somewhere along the line. I really don't know.

Mr. Garipey: Q. Now, do you know about the ink that is used on these blanks as they are cut out of the big sheets?

A. Generally speaking, yes. They are inks which are developed especially for this paper.

343 Q. Do you know what the ink is made out of?

A. It is made out of the usual ingredients, varnish, linseed varnish, pure linseed, coloring material, extender, dryer and so on.

Q. Is there anything in that ink that is detrimental to health?

Mr. Schaefer: I object to that. The witness is not qualified to testify to that.

The Master: Q. Do you know anything about health matters?

A. No, sir.

Mr. Garipey: Q. What about the penetration of this ink through? Have you performed any tests or done any research work in regard to the penetration of that ink after it is put on the blanks?

A. Ink on that kind of paper does not penetrate to any extent.

Mr. Schaefer: I move that be stricken as not responsive.

The Master: Read the question.

(Mr. Garipey's last question was read by the reporter as above recorded.)

The Master: Yes, the answer may be stricken.

Q. Have you performed any tests?

344 A. Specific tests, no, sir. May I explain?

Q. Yes.

A. From my general knowledge of this sort of thing, the ink cannot sink in to any extent. If you tear any of those printed surfaces you can see that the penetration of the ink stops a very short distance from the top. I might add that if there were any penetration of ink the cost would go up excessively, and that is always watched for.

Q. Do you know what the ink is composed of?

A. I have a copy of the formula of it, that has been supplied me.

Q. Is it possible that the dye part of the ink might not penetrate, while some other portion of the ink might go through further?

A. I think not.

Mr. Gariepy: Q. From whom do you buy the ink that you use on the Pure-Pak container that you put the name on?

A. The Hilton-Davis Chemical Company, Cincinnati, Ohio.

Q. In performing these tests or doing research work on the blanks after the printing, have you had any occasion to detect or find out whether the ink has penetrated through the five layers of paper?

345 A. The thing has always been so obvious that it would not, that I have not performed any particular test.

Q. What sort of a machine is this large paper board made in? Describe the type of machine, whether it is made out of steel or wrought iron or what it is, that the board as shown on Exhibit 33 goes into?

A. It is a large machine, made of all kinds of metal parts.

Q. Is it plated?

A. No, sir.

Q. It is not a plated machine?

A. I am not sure that I know what you mean by a plated machine.

Q. How long is that machine? Describe it to the Master.

The Master: What are you trying to show here?

Mr. Gariepy: I am trying to show that this is a gold plated machine that this goes into, which is the best type of machine for putting this paper board through in order to keep it free from bacteria and contamination.

The Master: Q. How about it, Mr. Witness?

A. The machine is about twenty feet long and ten feet or a little more high. It is like one of these intricate
346 presses.

Mr. Gariepy: Q. What about the plating?

A. No gold plate on it, no.

Q. Where does the gold plated machine come in touch with this product?

A. Really, I am not acquainted with any gold plated machine.

Q. Have you tested the paper board with regard to the transparency of the finished product, in the laboratory of the Gardner-Richardson Company?

A. Yes.

Q. And how often have you done that?

A. We do that daily, of the board, every time that we use the board.

Q. And in your tests of transparency, have you had occasion to gauge as to the quality of the stock used in it, whether virgin spruce pulp or otherwise at the time that you test it?

A. Yes.

Mr. Schaefer: What was that question?

(Mr. Gariepy's question was read by the reporter as above recorded.)

Mr. Schaefer: I object to that, as the witness has shown no qualification to make that determination, and there
347 has been no statement of what he did to determine it.

Mr. Gariepy: Let him tell what he did.

The Master: Q. Have you made any tests at all?

A. Yes, sir.

Q. Tell us what you did.

A. The standard test on that sort of thing is—

Mr. Gariepy: Q. Tell what you did?

A. Immerse the sheet—

The Master: Q. Did you do it?

A. Yes.

The Master: All right.

A. Immerse the sheets in molten paraffin, so they become transparent, and hold them up to the light and look through them.

Mr. Gariepy: Q. And what do you see when you look through them? How do you detect these things? What are the characteristics?

A. If a sheet of board is made out of clean, virgin stock, without any reissued stock containing any impurities, you won't see anything except a smooth, clear appearance, such as any transparent or semi-transparent film of paraffin would be.

Q. If it is not made out of clean, virgin spruce pulp,
348 how does it show up?

A. You see specks; you see clumps; anything that might not belong there shows up.

The Master: Q. Is this a part of your routine, to examine the sheets that you purchase?

A. Yes, sir.

Q. Have you ever noticed anywhere specks?

A. I have noticed an occasional speck.

Q. What have you done when you found a speck?

A. Well, I haven't done anything particularly. The proportion there would be so small that it would be indistinguishable.

Q. Have you ever seen sheets which appeared to you to contain something other than virgin stock?

A. No, sir.

Mr. Gariepy: Q. Since April 21, 1939, up to May 26, 1939, have you performed certain tests upon the virgin spruce pulp stock as secured from the Cherry River Paper Company and as it goes into the fabricated container here?

A. Yes.

Mr. Gariepy: Mr. Reporter, will you mark these sheets as Plaintiff's Exhibit 39 for identification?

349 (Several handwritten sheets containing laboratory reports referred to were thereupon marked Plaintiff's Exhibit No. 39 for identification.)

Mr. Gariepy: I show you a group of five sheets of paper, pinned together, marked Plaintiff's Exhibit No. 39 for identification, and ask you if you ever saw those sheets before?

A. Yes, sir.

Q. When and where?

A. These are laboratory reports on the colony counts of Cherry River paper bottle board and the finished bottles themselves, that is, finished in our converting plant.

Q. Did you make those counts and run those tests as tabulated on that Exhibit 39?

A. Yes, sir. They were done under my direction.

Q. And on the dates therein mentioned in the left hand margin?

A. Those dates on the left hand margin are the dates the sample was taken. The actual test may have been a day or so later.

Q. Is that in the ordinary run of your duties in connection with being chemist at the plant there, testing paper board?

A. Yes.

350 Q. And was that done in the ordinary course of your duties?

A. Yes, sir.

Q. Will you tell the Master what that shows with reference to your findings concerning the bacterial count in the paper board?

Mr. Schaefer: Let us have the method of test first.

Mr. Gariepy: All right.

Q. Describe your method of test in performing this work and doing this research?

A. The method of testing is to cut from the sample being considered, with sterile scissors and equipment, a ten gram sample of the board, which is disintegrated according to the standard technique, with a motor driven disintegrator, to form a pulp, with sterile water, and a portion of that pulp is pipe-headed into a Petri dish, into which is added a quantity of nutrient agar, which is used as a food for the bacteria to grow, if any are present, and the pulp well mixed with the agar in the dish and the prepared Petri dish incubated for forty-eight hours at 37 degrees Centigrade, at the end of which time the number of colonies of bacteria which may have developed, if any, are counted, and the results calculated back to colonies per gram of original paper.

351 Q. Were these findings shown in the right hand column made by you after performing these tests in the manner you have just described?

A. Yes, sir.

Q. On how much paper in the way of size? In grams.

A. Well, ten grams of stock were used to prepare the sample or to prepare the pulp.

Q. How many grams are there in the ordinary milk bottle made out of this same material, virgin spruce pulp?

A. I imagine there are thirty-four or thirty-five grams, which is merely an estimate.

Q. What was the bacteria count that you found in each one of those ten gram samples that you extracted?

Mr. Schaefer: Off the record just a moment.

(Discussion off the record.)

The Witness: A. The set of tests reported in Exhibit 39 show that the colony count varied from none up to as high as 156 colonies per gram, with the usual number around fifty or less.

Q. How many did you find that had as high as 156 colony counts per gram?

A. One.

Q. From April 21st to May 26, 1939?

352 A. Yes.

Q. And those are daily tests?

A. Yes.

Q. The average, you said, was fifty?

A. Well, that is not an average. It is usually less than fifty. I should add that that 156 figure was on a sample of board received in February, 1939, and test in April.

Q. And where was the sample board from February up until the time of the test, if you know?

A. It was in a cupboard in my office.

Q. And did the condition of the covering have anything to do with the colony count you found in it, where it was kept in your office?

A. I wouldn't know.

Q. Was it exposed in your office? Was it covered up or where was it?

A. It was covered up, wrapped up, also in the cupboard, behind closed doors.

Mr. Gariepy: I offer that in evidence as EXHIBIT NO. 39.

Mr. Schaefer: Q. Whose handwriting is this?

A. It is the handwriting of a Mr. Koehne, my assistant.

Q. These are also in the same handwriting?

353 A. This red X was just put there by me to identify the columns, certain results.

The Master: Q. Was that made under your supervision?

A. Yes, sir.

Mr. Gariepy: Q. Were these samples taken in the regular course of run at the mill or were there unusual circumstances in connection with the taking of these samples on which you performed these tests shown in Exhibit 39?

A. They were taken in the usual course of operation.

Q. Did they have anything to do with the matter of this litigation here?

A. No.

Q. Did you do it with this in mind or any foresight in connection with it?

A. No, sir.

Q. When did you know you were going to be asked concerning any such samples or testing, as shown in Exhibit 39?

A. Three o'clock the day before Memorial Day is the first I heard of it.

Q. That was after these tests were run?

A. Yes.

Mr. Schaefer: Q. I want to call your attention to the words "no count." They appear four times consecutively on page 1, opposite the dates 5/1, 5/3, 5/4, and 5/5, 354 and also to the same words when they appear on the fifth page of Plaintiff's Exhibit No. 39, opposite the dates 4/12, 4/13, 4/17, and 4/18.

A. The meaning of "no count" on that report means that they could not find any bacteria.

Q. I understand that. It appears to me from that exhibit on page 5 that the words "no count" and such counts as appear there, except opposite the dates 4/10 and 4/11, were written at a different time and by a person other than the person who wrote the balance of the paper.

A. There is only one man works on that thing in the laboratory and he is the one who kept this report. Prior to my knowledge of this affair I may have asked him to fill in certain information.

Q. What information did you ask him to fill in?

A. Sometimes the men in the laboratory have a habit of leaving a place blank instead of putting down the exact amount of what it is. That might mean "no count".

Q. Were these records made at the time the tests were run?

A. Yes, sir.

Q. Was this "no count" written at the time the rest of it was written?

A. I wouldn't know that.

Q. Was the "50" written opposite the date 4/14 at 355 the time the rest of it was written?

A. I have no means of knowing that, because I don't stand there watching them every minute the tests are being made.

The Master: Q. You notice there is a different handwriting, don't you?

A. Yes, I notice it.

Q. Do you notice whether that is a different handwriting? At least, there is a difference in the writing to an extent that one is darker than the other?

A. Yes.

Q. And that is what leads Mr. Schaefer to say that

probably it was done at a different time or by somebody else than the one who made the entries on the first sheets. Do you know whose handwriting the dark colored writing is, on sheet 4 there, in the right hand column?

Mr. Schaefer: The handwriting on sheet 5.

The Master: On sheet 5.

The Witness: A. The handwriting on those sheets, to the best of my knowledge, is that of Mr. Koehne. Now, he may have put down certain data and then come back a couple of days later and put those on.

The Master: Would you say the handwriting in the 356 last column is the same as the handwriting in the second from the last column, on page 5?

A. I would say so, yes, sir.

Q. The "no count" seems to be in larger characters than the writing in the last column, doesn't it?

A. Yes, it does.

Q. What?

A. It does, yes.

Mr. Gariepy: Speak up so we can hear you.

The Witness: It does.

The Master: Q. Would you say that is the same handwriting as the other?

A. To the best of my knowledge it is, yes, sir.

Mr. Gariepy: Q. Do you know anybody, Mr. Fisher, who worked on the preparation of this and writing this, other than this man Koehne?

A. There is none.

Mr. Gariepy: We will bring down Mr. Koehne, if it is necessary.

Mr. Schaefer: Q. You mean there is no one else or you don't know whether there is anybody else or not?

A. Mr. Koehne is the man assigned to that work. He is the one who knows about it.

Q. Do you know whether Mr. Koehne was the only man working on it?

A. I wasn't here every minute, no, sir. I might 357 add that this is a sheet taken from the work report as the experiments are being made. It never was typed up for any occasion such as this.

Mr. Gariepy: Q. That is the original entry?

A. That is the original entry, out of a loose-leaf book. These tests were started on one day and finished forty-eight hours or so later.

Mr. Schaefer: Q. Now, on page 2 of Plaintiff's Exhibit 39 you will see that in the last column on that page, beneath the red X, the words "no count" have been stricken out twice and underneath those words in one place the numeral 12 and in the other place the numeral 23 substituted.

A. I see that.

Q. Can you explain that?

A. The only explanation would be that he made the wrong entry on this laboratory work sheet and then changed it later.

Q. Are the entries made at the time the tests are made?

A. Yes.

Q. How would he have occasion to change it later?

A. Well, immediately after he made it. There is a large number of these tests going through at the same time and probably he found out he made a mistake, and changed it.

358 Mr. Schaefer: Q. Are the reports of the tests kept in any manner other than that, other than on these sheets?

A. Up until the present they have not.

Q. How would a man be able—assuming that on page 5, blanks were left, indicating no count—how would a man be able subsequently to go back and put in counts of 50 and 20, respectively?

A. I am sure I don't understand what you mean.

Q. I mean assuming that in the fourth column from the left, on page 5, these spaces were left not filled in, as you testified they might have been, a moment ago, from what source of information could a man subsequently go back and fill in with the counts of 50 and 20?

A. He might have a note in a pocketbook that they carry around with them.

Q. And they might not?

A. They might not.

Q. Assuming that they did not, there would be no source of information?

A. Well, a man is working in a small room by himself and he sees exactly what is going on; he has got the samples there; he can refer to samples after he has once finished this, he can put them in an ice box for a time and refer to the samples for a couple of days.

359 Q. The same thing I call your attention to with respect to page 6, certain of the writing on that page

appears to be a different character, a different shade or a lighter writing than the other writing, and it is true of page 6—the fourth, fifth columns from the left on that page; is that true?

A. Yes, sir.

Q. Did you make any of these counts yourself, any of the tests yourself?

A. I made hundreds of these particular ones myself; they were done under my direction, and many of them, myself, I have done.

Q. During this entire period of something more than a month you didn't do any of them?

A. I don't think I performed or did the actual counting of any of those samples there.

Q. Who is the man that performed the tests, Mr. Fisher?

A. Marcellus Koehne.

Mr. Gariepy: Q. What department is he in there?

A. He is one of my assistants.

Mr. Horan: Q. Do you keep a ledger result of these permanently in your office?

A. I have not.

360 Q. All tests you have are on paper similar to this exhibit 39?

A. Yes, sir, as to those tests.

Q. Do you have a record on paper similar to exhibit 39 of all tests you have run on this product?

A. That constitutes all the tests we have.

Q. This here exhibit, here, is all the tests that you have?

A. Yes.

Mr. Schaefer: Q. Those are all the tests that you ever run?

A. Yes.

Mr. Gariepy: Are you through asking him about that exhibit?

Mr. Schaefer: Yes.

Mr. Gariepy: Q. Mr. Fisher, the last question of Mr. Schaefer, and of Mr. Horan, was "Is that all of the tests you have ever run?" Is that during this particular time or previous to April 21, 1939?

A. My tests on the colony count only cover the ones I have given you here, on milk bottle board.

Q. The tests on the colony count only cover the ones you have given here on the milk bottle board?

A. Yes.

Q. Previous to April 21, 1939 did you run tests on milk bottle board?

361 A. Not on colony count.

Q. What did you run the test on?

A. Physical tests.

The Master: Q. Physical what?

A. Physical tests, for strength.

Mr. Gariepy: Q. That had nothing to do with bacteria count?

A. No, sir. Might I add, that we relied upon Dr. Sanborn's tests at that time, and that since then we decided to check up on it ourselves, too.

Q. This laboratory that you set up two months ago, at whose suggestion and request was this laboratory set up, and for what purposes?

A. It was set up at the suggestion of Dr. Sanborn that we do that type of work, to perform ourselves, on these situations.

Q. Previous to April 21st, and a laboratory such as was set up two months ago, run any tests such as these?

A. We didn't have any laboratory for that purpose.

Q. Koehne is down there and he is available in the event that we want to call on him, on this exhibit 39?

A. Yes, sir.

362 Q. And to testify concerning the entries here, the matter of handwriting that counsel and the Master have asked you about?

A. Yes, sir.

Q. The light shade and the heavy shade?

A. Yes, sir.

Q. Is that taken from the working files of the work shop in the laboratory?

A. Yes, sir.

Q. Did you instruct Koehne how to perform these tests?

A. Yes, sir.

Q. Where did you secure your experience with regard to your data with regard to the proper method of performing these tests?

A. Early in January, the second week in January, from Dr. Sanborn.

Q. 1939?

A. 1939. Dr. Sanborn conducted a school in which this simple technique for colony count was taught us and the

purpose of doing it, and after that is when we set up the laboratory to do that particular testing job.

Q. Did you go down and attend the school and take this course?

A. Yes, sir.

Q. How long a course was it?

A. It lasted a week.

Q. How many other than yourself—sanitarians, you might call them, milk sanitarians or paper board sanitarians who took the course with you, if you know?

Mr. Schaefer: That is objected to.

The Master: Overruled. You may answer.

A. As I recall there were about fourteen men there and one woman.

Mr. Gariepy: Q. After taking the course, you set up this laboratory?

A. Yes, sir.

Q. Did you perform any tests with second grade stock, material that might happen to be run from time to time, has any such test been performed as to bacteria?

A. We have no occasion to run them. We have run them at times.

Q. How many employees are there in the plant in Middletown where this paper board is converted into the Pure-Pak container?

A. I would estimate 400, more or less.

Q. Are there any rules and regulations concerning the conduct of these employees, when they work on the paper board or touch it after it is made into the blank or the product with regard to sanitation?

Mr. Schaefer: That is objected to. Just a minute, there.

The Master: Objection overruled.

Mr. Gariepy: Q. Will you answer?

364 The Master: Yes or no.

A. Yes, sir.

Mr. Gariepy: Q. What are those rules and regulations that you know of, Mr. Witness?

Mr. Schaefer: That is objected to.

The Master: Are those regulations in writing?

The Witness: No, sir.

The Master: He may answer.

The Witness: The regulations are that—there is a small group of people who work in this kind of work.

Mr. Gariepy: Q. What kind of work?

A. Converting the milk bottle board into the containers.

Q. Yes.

A. Those people are inspected at intervals by the nurse to see that they are generally clean, that they are free from skin diseases particularly and also it is the intention of a foreman of any particular group to be sure that his men wash their hands if they leave the floor for any purpose and return. Those particular employees also are dressed in white and exceptional measures are taken to keep the presses and the surroundings clean.

Mr. Gariepy: Q. What are those measures that are taken? That is what we want to know.

A. They use certain presses almost all of the time 365 and this is considered a special operation, it is not just placed anywhere in the plant where it might be convenient to do it, but it is in the glueing department, the girls who work there are dressed completely in white and that final operation is carried on in a room that is completely by itself. The packing is carried out in that place, too.

Q. Completely by itself, do you mean it is enclosed in glass or what?

A. It is a room enclosed with brick walls, windows and so on.

Q. What about the sweeping and cleaning that goes on, with regard to cleaning the plant; what is that process in the plant?

A. It is the ordinary process, sprinkle water on the floor and cleaning it up.

Q. Is there any vacuum used?

A. I am not acquainted with whether there is or not.

Q. There might be, you don't know about it?

A. There might be. I don't know.

Q. But you don't know?

A. No.

Q. Who would know about it?

A. The superintendent.

The Master: Q. Why do you exercise such care with regard to cleanliness and so on?

366 A. Well, if I may explain this, in the manufacture or actual converting of board for ordinary purposes, they would be less careful in the way they handle it, less careful, perhaps, in the way the men are dressed and the way they handle their machines and all that, and we just give it special attention in this case.

Q. But why the special attention? Is this kind of material subject to contamination?

A. No, sir, no more than anything else.

Mr. Gariepy: Q. Is there anything else made in the plant that goes into the container and in these various departments where special attention is given that the Master refers to, now? Is there anything that you make in the plant that goes in to the making up, the fabricating of the fabricated container other than this?

A. The printing and scoring and other operations are made in that room but the storing and packing is in a separate room and the glueing is in a separate room.

Q. The glueing is in a separate room?

A. Yes, sir.

Q. What about the storing, you say, in the separated sheets?

A. That is in a large press room with other operations.

Q. After it leaves there, it goes into these similar 367 sections?

A. Yes, sir.

Q. Similar rooms?

A. Yes, sir.

The Master: Q. I am trying to find out, if you did not take these precautions what would happen to this paper board; would it be likely to be contaminated?

A. I don't think it would.

Q. Let's assume now that you have employees who are not inspected for skin diseases and that some of them do have skin diseases; would there be any likelihood of germs or bacteria attaching to the paper board blanks or to the paper board?

A. I don't believe I could answer that. I am not qualified.

Q. What is your training?

A. Chemist—chemical engineer.

Q. You are not a bacteriologist?

A. No, sir.

The Master: Go ahead.

Mr. Gariepy: Q. Mr. Fisher, do you have any experience concerning the moisture content of the paper board and its effect upon the bacteria count in the paper board?

A. No.

Mr. Schaefer: I object to that.

The Master: He answered "no."

Mr. Gariepy: He answered "no," so it don't make 368 any difference.

Q. Mr. Fisher, have you made any tests yourself similar to the tests outlined in Exhibit 39 that has been identified here, that Mr. Schaefer and the Master asked you about?

A. Yes.

Q. When were they made?

Mr. Schaefer: What was the question?

The Master: "Have you made any tests yourself similar to the tests outlined in Exhibit 39."

Q. When were those tests made, that is, your own tests?

A. They were made prior to these tests.

Q. By these tests, you mean those shown on Exhibit 39?

A. Yes, sir.

Q. On this virgin spruce pulp from the Cherry River Paper Company?

A. No. They were tests in general to acquaint me with the method of doing the job.

Q. That is previous to the time you set upon performing these tests in April?

A. Yes, sir.

Q. That is after you took the course in January of 1939?

A. The tests I took of this nature were all in Dr. Sanborn's School.

369 Q. Referring to the tests you ran at your plant after getting the board from the Cherry River Paper Company—do you follow me?

A. I follow you. I have made tests in connection with those, Mr. Koehne has made them and assisted with them.

The Master: Q. On Cherry River Paper board?

A. Yes, sir, largely to show the technique and without particular thought of what the result might be.

Mr. Gariepy: Q. What was the highest count that you found, colony count per gram or per 10-gram in that paper board when you ran these tests?

A. As I just said, I did not run the count on them, I was following the technique of running the counts.

Q. You did not make the count?

A. No, sir.

Q. Just the procedure only?

A. Yes, sir.

Q. The ultimate results of what you found did not concern you?

A. No.

Mr. Gariepy: I offer in evidence, counsel, Plaintiff's Exhibit 39 which has been testified to and which you have interrogated the witness about.

Mr. Schaefer: No objection.

The Master: It may be received.

370 (Said several sheets were offered and received in evidence, were marked "PLAINTIFF'S EXHIBIT NO. 39" and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. Is there any chance in the processes employed at the plant, in the regular procedure in the production of the paper board, for the second growth material that might be used in the manufacture of some other product, to be gotten into that section of the mill making the paper board here?

A. I would say no. Anybody could see that they are two different things.

Mr. Gariepy: You may cross examine, Mr. Schaefer.

The Master: We might take a recess for a couple of minutes.

Mr. Schaefer: We have reserved our right to cross examine the witness, if the Master please, and he will be produced back at a later date for cross examination.

Mr. Gariepy: Yes.

The Master: We will have a recess for a few minutes and you can put on your next witness.

(A five-minute recess taken.)

Mr. Schaefer: There are one or two questions I would like to ask Mr. Fisher without waiving my right to cross examine in the future.

371 The Master: Go ahead.

Mr. Schaefer: If that is agreeable to counsel.

Mr. Gariepy: Go ahead.

Cross-Examination by Mr. Schaefer.

Q. These are blanks that were shown to you on your direct examination, Mr. Schaefer?

A. Yes, sir.

Q. Would you look at this blank.

A. (Witness examines object.)

Mr. Schaefer: I will ask that this be marked Defendant's Exhibit 3 for identification.

(The piece of cardboard referred to was thereupon

marked by the Reporter "Defendants' Exhibit No. 3 for identification.")

Mr. Schaefer: Q. Will you examine Defendants' Exhibit 3 for identification and tell us what the red spot is appearing in the second panel from the right on that exhibit?

The Master: Red spot? Where? Right in the middle of it?

A. I don't know what it is.

Mr. Schaefer: Q. Is there any possibility of ink from the top of one of the printed blanks attaching itself to the bottom of the next printed blank?

372 A. There is such a possibility, yes. That is always guarded against.

Q. Successfully?

A. I think so, yes, sir.

The Master: Q. While you are talking about that, Mr. Schaefer, why not inquire about the dark line, the dirt or something that appears right on the fold on several of the folds of the blank?

A. I don't know the history of this particular sample but I do know this, that the normal inspection that these things go through as they are being fed into the glueing machine would mean the rejecting of this.

Mr. Gariepy: Q. Defendant's Exhibit 3 would be rejected?

A. Yes, sir.

Mr. Schaefer: Q. As they are going into what?

A. The glueing machine where they are folded and receive this glue.

Q. How are they put into the glueing machine?

A. A pile of these blanks is lifted by a girl and piled about two or three inches in thickness and she slaps them down against the edge of the table to fan them and separates them, one from another, and then she can see each one of these as it is being fed into the machine.

373 Q. Do you mean that she picks up each one and puts it into the machine?

A. She puts several hundred into the machine and the automatic feeder takes hold of them; she lifts them and fans it, as it is called.

Q. As you would shuffle a deck of cards?

A. Yes, sir. There is one girl called the inspector, or whatever you want to call her, at the end of the machine. Two of them work on the feeding end of the machine; one

prepares them to go in and the other one actually puts them in, and between the two of them they take one look at it like this.

Q. What does the one do who prepares them to go in?

A. She picks up a bunch and slips them—they are very deft—I can't do this, they hit them, and hit them so that each one shows up a little bit and they fan the things and look at them very quickly and they pass them on to the next person that shoves them into the machine and this inside surface is up here, that practically all they touch is on the top of the thing you see here which actually goes underneath the glue flap later.

The Master: This is submitted as a sample. I notice another spot on the second panel from the left. Then there is some sort of spot on the first panel and then there is a spot near the bottom of the third panel from 374 the left, as well as a dark line of dirt or whatever it is on the folds.

A. If I may answer this way, please—lying around in the room here they are going to get dirty but they are not handled that way in the plant. They go through this glueing machine 15,000 to 18,000 per hour. They are going through pretty fast.

Q. Would you say these marks left on the folds have been the result of the blank lying around here?

A. I should say so, here or some place else. Certainly this condition does not prevail in the plant.

Mr. Schaefer: Q. What does the other girl do?

A. There are two girls at the end of the machine.

Q. You have described the operation of one.

A. Yes, sir.

Q. What does the other one do?

A. One assists the other. One has the job of actually taking the pile that is ready for insertion in the glueing machine and putting it out where the automatic feeder feeds them through at the high rate and the other girl takes them off of the flap such as shown in one of those pictures and fans them and looks at the cartons to observe things like this which, incidentally, this is impossible—you couldn't like that in the plant.

375 The Master: Q. How do you know this is not something that occurs at the plant?

A. I don't know the history of it, of course, but just from a general knowledge of how these things are handled.

Q. You said ink might be impressed from the top of one to the bottom of the other blank?

A. Certainly. This is not ink on this score line.

Q. How do you know it isn't?

A. In the first place it is not the color of any of the ink on this carton.

Q. How do you know it is not grease?

A. That would take chemical analysis of course to determine that.

Q. You notice those black marks are right on the folds, apparently where the mark is made?

A. That is natural, the part that picks up the farthest from this sheet—like a blotter on the desk, no matter how clean the desk is, it is going to get dirty.

Mr. Schaefer: Q. How fast are these sheets fed into the glueing machine?

A. It varies from 15,000 to 18,000 an hour.

Q. An hour?

A. Yes, sir.

Q. One girl feeds these things?

A. Yes.

376 Q. She fans them at the rate of 15,000 to 18,000 an hour?

A. Yes, sir, she is working with big stacks of them, something like that.

Q. Why does she fan them?

A. It is partly in order to be sure that each one has got a little air in between it to make it easier to fit into this machine because those things are quite highly adhering, they are not stuck together, but they are highly adherent because they are handled in bundles and as soon as they break the stack, which is the common procedure in all converting work, there might be a tendency for two of those things to start through the glueing machine at once or to jam the machine.

Q. Does that ever happen?

A. Yes, sir.

Q. Frequently?

A. I wouldn't say frequently. You might get it. It does happen.

Q. It could happen?

A. That does happen, yes, sir.

Q. Is that frequent?

A. I wouldn't say that is frequent, no.

Q. Then what is the procedure when that happens?

A. Well, that means that somewhere along the length of this glueing machine there are some cartons which are all jammed up and have to be thrown away.

377 Q. How do they do that?

A. Reach in and pull them out, a matter of a few seconds.

Q. The only purpose of the fanning operation you have described is to separate these blanks, one from the other, is that right?

A. No, it is also to give another examination of the sheets.

Q. The girl examines them at the rate of—what was that figure—15,000 to 18,000 on hour?

A. Well, there is about 50 to 60 carton blanks in each inch thickness of that.

Mr. Gariepy: Q. Go ahead.

A. So you see a few inches of it makes a couple hundred cartons.

The Master: Q. Do any of these blanks pick up dirt quite readily? Do any of these blanks or not pick up dirt quite readily?

A. I wouldn't say that they do. The actual time that they are exposed to the air as individuals is very, very short.

Mr. Gariepy: Q. How short is it?

A. It is a matter of seconds at any particular time.

The Master: Q. Would ordinary handling cause finger prints to attach, to any extent?

A. Take an individual blank and handle it, yes, sir.
378 I might add, these girls of course have to work at high speed.

Q. Let's take this one right here. You will notice apparently some ink impressions near the end of two of the panels.

A. Yes, I notice that.

Q. What do you think causes that? That is on the inside of the blank. Also at the bottom of the third one and also on that one—all four panels, would you say that that is the impression of ink in those panels?

A. It might be, yes, sir.

Q. Is that an ordinary occurrence, or don't you know?

A. I really couldn't say. It is a thing guarded against by various means.

Q. Well, there is another one also, a stain as of ink on each of the four panels?

Mr. Schaefer: At the bottom, as well, Master.

The Master: What?

Mr. Schaefer: At the bottom of every one of them.

The Master: This is the bottom, isn't it?

Mr. Gariepy: That is the top.

The Master: The top?

Mr. Gariepy: The bottom as you are holding it. That is the scoring line, referring to the scoring line.

The Master: Q. This is near the top of the inside
379 of these blanks; there seems to be ink stains, isn't it?

A. There is a reddish stain there, yes, sir.

Q. The same thing in the next one?

A. That is dirt.

Q. With the addition of various smudges on each of the panels; do you know what those are?

A. I don't know.

Q. There is still a faint ink print or a little faint stain there at the top, it looks like ink stain; there is a loose fibre of some kind on one of these, do you think that might be one of the things you cut off of the end?

A. No.

Q. Do you think that those little pieces that you cut off sometimes get in the body of the container or on the blank lying on top of it?

A. That might happen on rare occasions, I say rare, because you are handling these things so fast.

Q. There is another one there that seems to be a sort of little ink stain near the top, isn't there?

A. Yes.

Q. Wherever there is a fold there seems to be a sort of line or something; there is another ink stain on the inside near the top, is that right, on the next one?

380 A. Yes, sir.

Q. The same thing on the next one?

A. Yes, sir.

Q. There is another one—it seems to be on almost every one, some sort of stain near the top.

Mr. Schaefer: I think you can go further and say every one, and also that line on the bottom.

Mr. Gariepy: You are referring to the scoring, counsel—and the Master, too; you refer to the place where it is scored and where a red line also appears. That is the scoring, the red mark only appears at the scoring and where the paper is under pressure and some part of it is higher than the rest of it.

The Master: Do you think that is ink in every case near the top? There seems to be one panel there or one sort of a box, square, near the top, it seems to have a little bit of reddish smudge or something on almost every one of these.

Mr. Schaefer: That is on the inside in each case.

The Witness: May I make a remark?

The Master: Yes, sure.

The Witness: The particular smudge appearing on this upper left hand corner.

Mr. Gariepy: The lip part.

The Witness: Near the lip, this is out of contact with the milk.

381 Mr. Gariepy: The witness is folding the carton.

The Master: Q. How is it out of contact with the milk?

The Witness: I mean these two.

The Master: How about the other three sides of the container?

Mr. Schaefer: Q. How about when you pour it?

Mr. Gariepy: The witness opens up the pouring lip and demonstrates it.

Mr. Schaefer: Q. This red line that has the appearance on the bottom:

A. That red line should not be there. It is an unfortunate set of samples. The girls would not pass that sort of thing.

Q. Where did these come from?

A. I picked them up from over there to show what a pile of cartons is, without any particular reference to the thing we are now speaking of. May I tell what remedy is used in a situation like this?

The Master: Yes.

A. In order to prevent or eliminate or reduce the offset which this may be in this set of samples which is not perfect, use is made of a spraying machine, which is thrown in between each sheet which prevents the sheets from
382 sticking to one another as they might do if that were not present. It is called an "offset spray" which comprises a solution of gum arabic which is a material partly used on adhesive employes to make them stick, dextrum and starchy material, water and alcohol and after each sheet is spread as it falls down onto this pile there is a whiff of that material goes in between the sheets and forms tiny specks of this material on the sheet and keeps the sheets separated one from another to a very slight

degree. On this particular set of samples something did not work right, let's put it that way. That would not have gotten by, that would have been caught on an inspection, anyway.

Q. Didn't this go through an inspection?

A. No, sir, this didn't go through an inspection. These are sheets, pile of sheets ready to go to the glue machine and on the glue machine, if I may say this, again—

Q. When does inspection occur, before or after the glueing machine?

A. At the beginning of the glueing machine as the girls feed it in and they will undoubtedly notice a thing like that and the foreman will reject it. I might even add that this is not a representative set of samples, that the scoring 383 has not been completed there either. These things wouldn't go through a machine anyhow because the scoring is incomplete.

The Master: Q. Do you say there is one operation when you trim the ends?

A. Yes, sir.

Q. Is that right?

A. Yes, sir, that is at the end of the cutting and scoring press.

Q. We have noticed in going through these blanks that certain little chips or slivers of paper are attached to the edges and in some instances the slivers are found on the inside surface of these blanks. You have noticed that?

A. Yes.

Q. Is there any operation which eliminates those slivers?

A. I would be unable to answer with respect to this particular set of samples because they were not selected with that in view.

384 Q. Take any set of samples, take any set of blanks, there is this cutting operation?

A. Yes.

Q. And then there may be or may not be some slivers or little fine fibres which is the result of the cutting and in some instances the slivers remain right at the edge, which has just been cut, and in other instances some of the slivers find their way down on to the side or the surface of the inside of the containers. Is it possible that some of those slivers might remain in the finished container?

A. There is a possibility of an occasional sliver getting through, yes, sir.

Mr. Gariepy: Are you through, counsel?

Mr. Schaefer: Yes.

Mr. Gariepy: Q. Is this sizing before that process that you mentioned, that coating?

A. This is before paraffining.

Q. And before this coating that you just mentioned a minute ago?

A. Yes, sir. There isn't a coat of anything; there are spicules of it.

The Master: Q. Moisture?

A. It isn't moisture, if you please. There is moisture present, it is in the form of a little half
385 sphere of something to keep the sheets from contacting, face to face.

Mr. Gariepy: Q. These haven't received that?

A. I think they haven't.

Q. Do you know, or don't you? If you don't know, don't guess at it.

A. I think they haven't.

Mr. Ball: Q. That is part of the printing process?

A. Yes, sir.

Q. Presumably, if those things are printed, and they appear to be, if the machine was operating, that took place, this operation that you have described for the purpose of keeping the thing separated; is that true?

A. I would assume that.

Mr. Schaefer: Q. What does the girl do when she finds a defective blank, feeding it into the glueing machine?

A. She doesn't feed it in.

Q. How does she stop it?

A. There are two girls, one of them who makes the inspection and airs or leaves the cartons, and after she has it properly prepared she passed it over to the other girl, who feeds them in.

386 Q. How does she pick them up? Will you take this bunch that the Master is holding and show us how the girl picks them up—this pile that is solid?

A. She feeds them into the machine. It has an inclined plate on the lid.

The Master: Q. How could she see each and every blank?

A. This girl who feeds it doesn't; it is the girl ahead of her who does this inspecting.

Mr. Horan: Q. Does she inspect every blank?

A. She will go like this (indicating). I am not very

adept at this thing. However, she holds it like that and looks at it.

Q. Can she see the entire board with that inspection?

A. She sees any glaring defects, yes.

Q. Assume that she goes like this (indicating), can she see the entire board like this?

The Master: Just fanning it.

A. Here is the reason that they can—all of these paper processes are used in handling large amounts of material, sheet after sheet, carton after carton, so that if there are any defects appearing in one, the likelihood is that there will be any number of them. If I may go back further on the paper machine, for example, there will be many that 387 go out in an hour, and the difference between the beginning of fifteen minutes and the ending of fifteen minutes is the same, and that same difference continues right through the entire handling process.

The Master: I have been holding that pile of blanks on my lap here and I notice now I am just full of slivers, little particles of fibres.

Mr. Schaefer: So is the witness.

The Master: They probably come from the edges which have been cut.

Q. Is there any likelihood of these fibres and slivers getting inside of the container at the time it is made up?

A. I wouldn't know. Judging from the appearance of this set of carton blanks, they haven't done a very good job of cleaning off the edges of it. That may be part of it. As I say, these were selected to more indicate what a pile of blanks is, than these other features.

Q. Those were picked up by yourself at random, weren't they?

A. Yes, sir.

Q. Well, is there any reason to believe that these are not fair samples of all of the blanks around there?

A. I would say this, if I may, that the indications here are that the rubbing of the wire brush was not car- 388 ried out very carefully.

Q. Is there any reason to believe that these are not fair samples of all of the blanks lying around?

A. I don't believe they are fair samples in that respect, but as to general configuration, shape and an indication of how a pile of them is handled, and so on.

Q. Is there any reason to say that the wire brushing

is done with any greater care on the others than it was done on these?

A. I wouldn't know.

Mr. Schaefer: Q. I want to call your attention to a sheet of uncut blanks to which you referred on your direct examination and I would like to ask you to look at the inside surface of this roll of blanks. Apparently, in that instance the outside of these blanks being printed in green ink, the complete impression or very nearly the complete impression—or what is it, on the other side, that appears on the inside of the containers—is that correct?

A. Apparently so, from the sample. May I see the other side?

The Master: Q. That is either the impression that has gone through or else it has been impressed from the front of the next blank?

A. It hasn't gone through.

389 The Master: It is probably from the next blank, then.

Mr. Schaefer: That is as far as I am prepared to go with the witness at the present time.

Mr. Gariepy: Q. Mr. Fisher, Mr. Schaefer just tore the side of a blank here. Did you see anything coming through any of the layers of paper?

A. No, sir.

Q. The sample that he tore here is green?

A. Yes.

Q. Will you tear one of the red ones and show the Master whether anything comes through any of the fine layers of that paper? Tear it sideways, if you can, like he did?

A. (Witness tears same.)

Q. Is there anything shown there after you have taken off a couple of layers of that paper?

A. No, sir.

The Master: It doesn't shown any.

Mr. Gariepy: Q. With regard to these slivers that the Master and counsel asked you about, is that part of the same virgin spruce pulp that the container proper is made out of?

A. Yes, sir.

Q. And if there is no bacteria in the virgin spruce
390 pulp and the board, would there be any bacteria in the smaller slivers?

A. No, sir.

Q. What about the paraffining? What would it be in the event there was a small sliver inside of that container, in the box or the carton blank when it went then into the machine and was paraffined; what would happen to it?

A. It would come off in the paraffin.

The Master: It would do what?

A. Come off into the paraffin, the molten paraffin.

Q. How would it come off?

A. The paraffin is molten, it is liquid.

Q. What would it do, just make the sliver be imbedded in the hardened paraffin; it wouldn't destroy the sliver, would it?

A. It wouldn't destroy the sliver; it would probably go into a chunk of the paraffin, perhaps an occasional one would go into the paraffin and be covered and protected with the paraffin.

Mr. Gariepy: Q. The Master and counsel examined you concerning defendant's exhibit 3, the exhibit which I hand you; and I now hand you plaintiff's exhibit 40, do you see any grease lines or heavy black lines on the 391 scoring in the inside of this—referring to the straight lines, the cross marks, the horizontal and vertical—do you see any grease lines on there?

A. I don't.

Q. I show you the whole batch of about seventy-five or a hundred and ask you to look through them and say whether you find any green or black lines or grease lines that the Master and counsel referred to, on any of the scoring lines, horizontal or vertical, going through the inside of those containers—those blanks of containers? I counted those and there is about ninety or a hundred of those, Mr. Fisher.

A. I don't see any grease marks or black marks on the scoring lines.

Q. The Master is pointing to exhibit 40, to a little dark mark here just below the scoring at the top and one over on the left; what, in your opinion, is that that shows up there dark on the inside; can you tell without disintegrating that paper and analyzing it?

A. I can't tell just by looking at it.

Q. What, in your opinion, is that that shows up there?

A. It might be a crush mark.

Q. What is a crush mark?

A. A crush mark—well, if a paper being formed
392 up on a machine is a trifle heavier, speaking in thou-
sandths of an inch and less, on one spot or another,
the calendar operation is carried out, that spot is com-
pressed more and forms a crush mark on the end of the
paper machine.

Q. Is that common in the making up of paper board
and fabricating of containers?

A. It is something that can happen easily and it also
can be remedied.

Q. How is it remedied, if you know, Mr. Fisher?

A. It has to do with the changing conditions on the
paper machine.

Q. The Master asked you, also counsel asked you, con-
cerning the red marks shown at the top of this blank, on
the inside. Where does the milk end, with regard to after
the bottle is folded, with regard to the gabled roof? Where
does printing appear to show through? Will you fold
one of those up and show the Master and counsel?

A. I am going to dirty this one with my fingers now.

Mr. Schaefer: Suppose you take another one.

Mr. Gariepy: Take this one—another red one, the same
thing.

A. What was the question? Will you please read it
to me?

393 (Question read.)

A. The milk line would be below the bottom of the
gabled roof.

Q. Is the inside of the gabled roof paraffined as are the
entire four sides?

A. Yes, sir.

Q. So that this apparent red that they have asked you
about would be covered by paraffin, sealed and water-
proofed there?

A. Yes, sir.

Mr. Schaefer: I object to the "sealed and water-
proofed."

Mr. Gariepy: Q. Would it be sealed, then?

Mr. Schaefer: I object to that. There is no showing
here of competency on the part of this witness to testify
to that.

The Master: Just say it is paraffined and we have the
other testimony as to what the effect of the paraffining is.

Mr. Gariepy: Q. Look at exhibit 3 of the defendant's
and plaintiff's exhibit 40 and feel of each of them and

tell me what these scorings show and indicate as to elevations or protrusions above the flat surface?

A. Might I remark that every time we feel it, we dirty it some more.

394 Q. Yes.

A. There are elevations, yes, sir.

Q. There are elevations?

A. Yes, sir.

Q. Those elevations, are they sufficient to cover up this grease or dirt shown on defendant's exhibit 3 around there?

A. Yes, sir.

Q. Here is a container that I have just rubbed across the top of the table. Will you tell me whether there is scoring where I put the weight on the table—is there any mark on it?

A. It shows black marks.


Mr. Gariepy: Do you want to ask him any more now?

Mr. Schaefer: Yes. I would like to have these marked as defendant's exhibits 4, 5 and 6.

The Master: They may be so marked.

(The three carton blanks referred to were thereupon marked by the Reporter "Defendants' exhibit 4, 5 and 6," respectively for identification.)

Mr. Rall: There isn't going to be any dispute on my part that in this printing operation which is a high speed proposition, and as the paper gets heavier on the 395 pile it tends to create an impression on the next sheet, called an "offset". There isn't going to be any dispute, at least from me, that in this printing operation there is in some of the containers an offset inside of the container.

The Master: What do you mean by an offset? 

Mr. Rall: That is what the printers call an offset, an impression made on the back of a sheet by the weight of another as the pile gets higher.

Q. I am correct, Mr. Fisher, that these go into the pile?

A. Yes, sir.

Q. As the pile gets higher, of course, that gets heavier?

A. Yes, sir.

Mr. Rall: And in the ordinary operation, of course, they try to prevent the offset, because it looks smudgy, for one thing. As the pile gets heavier, the weight, of course, it is going to make an impression from the printed

surface of one to the back of the other, and that is only an offset.

The Master: Is that a wet impression, sometimes?

Mr. Rall: Pardon?

The Master: Is that a wet impression, sometimes, it is just an ink impression?

396 Mr. Rall: The pile gets pretty heavy and one will impress or offset on the other. I have made that statement because it looked to me as though these exhibits were being offered for that purpose, and there is no dispute about that.

The Witness: May I make a remark?

Mr. Schaefer: Wait a minute.

Mr. Gariepy: There is no objection to that statement. Fieldcrest Dairies, plaintiff, can adopt the same thing concerning the offset on the same container.

Mr. Schaefer: For illustrative purposes, I think we might have these in. These are the blanks which you testified concerning a moment ago, the outside of which, in case, is printed in green, showing you defendants' exhibits 4, 5 and 6 for identification.

A. Yes.

Q. The offset in each case appears in green on the inside of the paper blank?

A. There is a trace of offset, yes.

Q. Is there sometimes more offset than this?

A. No.

Q. Why do you say there is a trace of offset?

The Master: Traces may be very distinct and may not be so distinct.

397 Mr. Schaefer: I offer defendants' exhibits 4, 5 and 6 in evidence.

Mr. Rall: No objection.

The Master: They may be received.

(Said carton blanks so offered and received in evidence were marked "DEFENDANTS' EXHIBITS NOS. 4, 5 and 6", and are attached hereto and made a part hereof.)

Mr. Rall: Q. Those exhibits were taken out of the roll which has been die cut, but not separated?

A. They were taken from a pile of sheets.

Q. Referring to the exhibit counsel just handed you, printed in green, it is true that these exhibits were taken here this morning from a couple of sheets of container board that has been die cut and printed, but not separated?

A. Yes.

Q. And they were physically separated this morning?

Mr. Schaefer: That is correct.

A. Yes.

Mr. Rall: Q. Now, do you know where these sheets came from?

A. Yes, sir.

Q. Did you bring them?

398 A. I brought them.

Q. At what point in the manufacturing operation did you take them?

A. They were taken from the end of a cutting press.

Q. Is there any reason to believe that these are either more offset or less offset than the general, we might say, run of the press?

A. More offset.

Q. Than the general run of the press?

A. Yes, sir.

Q. Why is that?

A. I don't know why it occurred. I wouldn't know.

Q. The only thing I am trying to get at is, did you take these out normally, at a normal time in the operation, or did you take them when they were wet, so that the offset might be due to that?

Mr. Schaefer: I object to leading the witness.

The Master: Sustained. Don't lead the witness.

A. The particular samples were taken by one of my assistants who went out and brought me some sheets from the cutting press. The best of the sheets should merely show how this scrapping operation occurred, how the brushed cut-outs are eliminated by hitting them with a hammer.

399 Mr. Schaefer: Q. They were sheets picked at random, were they?

A. Yes.

Mr. Gariepy: Was there an objection to the exhibits?

The Master: They have already been received.

Mr. Schaefer: May I see plaintiff's exhibit 40?

Mr. Gariepy: Yes.

Mr. Schaefer: Q. Will you look at plaintiff's exhibit 40, at the next to the right hand panel of that, because that exhibit is slanted, to catch the light, you can see a shiny greasy spot appearing in the upper portion of that, next to the right hand panel?

A. Will you point to it exactly?

The Master: Now, I will put a ring around it with a pencil.

A. I see that, yes, sir.

Mr. Schaefer: Q. What sort of a spot is that?

A. Greasy spot, in my estimation.

The Master: Q. What is that?

A. Greasy spot, where the calendars have pounded down or condensed the sheet more in one spot than in another, due, perhaps, to being back on the paper machine further, the formation being a trifle thicker.

Mr. Schaefer: I would like to ask that this pile 400 of blanks be taken by the Master; only the top one of which I have handled and Mr. Horan has handled.

The Master: All right, I will take it.

Mr. Schaefer: So that there will be no misunderstanding about it, I will now offer in evidence defendants' exhibit 3, marked for identification.

Mr. Gariepy: No objection.

Mr. Rall: No objection.

The Master: It may be received.

(Said carton blank so offered and received in evidence was marked "DEFENDANTS' EXHIBIT NO. 3", and the same is attached hereto and made a part hereof.)

The Master: We will now take a recess until 2:00 o'clock, p. m.

(Thereupon; at 12:35 o'clock, p. m. on June 5, 1939, recess was taken until 2:00 o'clock, p. m. on the same day.)

401

• • (Caption) • •

Monday, June 5, 1939, 2:00 o'clock p. m.

Met, pursuant to recess.

Present:

Mr. Gariepy,
Mr. Rall,
Mr. Schaefer,
Mr. Horan.

402 HARRY C. FISHER, a witness called on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Cross-Examination by Mr. Schaefer (Continued).

Q. Mr. Fisher, I would like to ask you to look at each one of this pile of blanks. We will discard the first one. Look at each one of them. On the first one you look at you see across the scoring line at the bottom of the container a red mark.

A. Above it or below it?

Q. On the scoring line.

A. There is a trace of red there, but it is not a continuous red mark, unless the shadow makes it look that way.

Q. But there is red?

A. There is a trace of red in spots, yes.

Q. And on the next container, is there the same trace of red?

A. Yes, sir.

Q. And on this container, in the left hand panel, there appears to be a mark. Can you tell what that is?

A. I don't know what that is, really. It might be a pencil mark for all I can say.

Q. And on the next blank there is the same red mark at the scoring line.

403 A. There is a trace of red in spots along that line, but it is not a continuous red mark.

Q. And in the left hand panel there is another mark. Can you tell what that is?

A. No, sir.

Q. And on the next blank there are also red marks at the scoring line at the bottom of the blank?

A. Yes.

Q. And the next?

A. Yes.

Q. And the next?

A. Yes.

Q. Those red marks are also present on this next blank?

A. Yes.

Q. They are somewhat more pronounced on the next one?

A. Yes, they are.

The Master: That is all along that fold?

Mr. Schaefer: Yes, sir.

Q. And the same condition with respect to the next blank?

A. Yes, sir.

Q. And the next one?

A. Yes, sir.

Q. The next one?

A. Yes. These blanks are not complete, however, because the scoring has not been extended over to the edge and they would never get into production.

The Master: I noticed on that big pile you had here before, the fact was the same there, that the fold was not all the way over to the end?

404 Mr. Schaefer: Will you shape that container, Mr. Witness?

The Witness: As we would send it out, it would be this way (illustrating). The score has not extended from there to there. The same thing up here.

Mr. Schaefer: May I see Plaintiff's Exhibit No. 2?

The Master: All of these are that way, with respect to that scoring, every one of them. All those that you have here. As a matter of fact, it seems to me that you do not want to score all the way to the end, because that is where it overlaps and pastes together. Here you have made the point right along that it was not finished. You see, there is an overlap on the right hand panel that fits in just about the distance on the first panel, where that scoring ends, for about a half or three-quarters of an inch. It fits right on it. It makes a better point of contact without that scoring in there.

The Witness: I must be wrong on that point, then.

Mr. Schaefer: Q. You mean, that is the way it should be?

A. I never noticed that particular point in connection with it.

Q. Now, this next blank has also the same red 405 marks along the scoring line.

A. A few traces of it, yes, sir. This panel, I might remark, has not got any.

Q. Now, in the right hand panel of this blank to which you just referred there are two spots. Can you tell me what those are?

A. They seem to be scuff marks of some kind. I don't know what they are. They seem to be indented a little bit.

Q. This next one, do you see the same red marks along the scoring line here?

A. Yes, sir.

Q. And in the next the left hand panel of that container, when you hold it so that the light is reflected from it, do you see a shiny spot?

A. I see several shiny spots, many of them.

Q. Do you see a spot that looks like a grease spot, near the left hand edge of the left panel?

A. I think I see the spot you refer to. I wouldn't call that grease, though.

Q. What would you call it?

A. It might be a crush spot.

Q. What else?

A. Possibly it might be a slime spot.

406 Q. And is the same thing true of the spot on the panel next to the second from the right of that blank?

A. I can only answer by saying that it might be. There is no way to tell by looking at it.

Q. Whether it is a slime spot or not?

A. No.

Q. The spot is there, however?

A. There is some spot, yes.

The Master: Q. What do you mean by a crush spot?

A. A crush spot is a spot on the sheet that occurred while the sheet was being made on the paper machine. For example, if the sheet is a trifle thicker when it is formed on the wet-end of the machine, in the paper, on the rest of the machine when it goes through the calendering operation there is more pressure exerted at that particular

spot, and it has that particular shape and appearance, and it also occurs at that point because there is a little more water pressure on it.

Mr. Schaefer: Q. And the spots you just identified are either crush spots or slime spots?

A. Yes.

Q. Now, the next container, the same marking along the bottom scoring line appears there, doesn't it?

407 A. Yes, sir.

Q. And on the—

A. Very slight, though.

Q. Perceptible?

A. I would say that, yes.

Q. And in the next to the right hand panel there is another spot such as you have just looked at and said was either a crush spot or a slime spot.

A. Yes.

Q. And the same red mark along the bottom scoring line of the next container blank appears?

A. Yes.

Q. And along the scoring line of the next blank?

A. Yes.

Q. And in the left hand panel of the next line are two of the frayed ends of fiber which you described previously.

A. One of them has disappeared.

The Master: Both fell off.

The Witness: Yes.

Mr. Schaefer: Q. There were two of them there?

A. Yes, sir.

Q. And also traces of red along the bottom scoring line?

A. Yes, sir.

Q. And the same traces of red along the bottom of
408 the scoring line of the next container?

A. Yes, sir.

Q. And the next one?

A. Yes.

Q. And the spot in the next to the right hand panel of this container blank is a slime spot or a crush spot?

A. Please point it out.

Q. Just look at the container and you will see it.

A. Yes.

Q. And the same or similar traces of red along the scoring line of the next container?

A. Faint, yes, sir.

Q. Fainter than the others?

A. Yes, sir.

Mr. Gariepy: Are you through?

Mr. Schaefer: I think so. Yes, that is all.

Redirect Examination by Mr. Rall.

Q. Mr. Fisher, these traces of red on the scoring line are barely perceptible, that is true, is it not?

A. Yes, sir.

Q. You held them up to the light, a strong light in the window, to be able to tell whether it was a red mark at all, didn't you?

A. Yes, sir.

Q. On the opposite side of these scored blanks, 409 that is, opposite the score mark at the bottom to which

Mr. Schaefer has referred, there is a printed red line that is part of the printing, isn't there?

A. Yes, sir.

Q. In your opinion does the red mark on the scoring line represent an offset or does it represent penetration through the paper of the ink?

A. Why, that is an offset.

Mr. Schaefer: Just before you go on with that, how does the record stand?

(The record was read as above recorded.)

The Master: I have noticed at the bottom line, the scoring line, what appears to be a reddish tint to the scoring line, which in certain instances is more pronounced than in others. In some instances the line is quite red, that is, a darker red than it is in some of the other instances. I cannot make any generalities as to just how dark that scoring line is of the instances where it looks red at all, but it varies.

Mr. Rall: That is acceptable to me.

The Master: In some instances it is quite clear and in other instances you have to look a little closer to perceive that the scoring line has a reddish tint to it. Also with reference to the marks to which attention has been 410 called on some of these blanks, in some instances the mark is about the width and length of an eyelash and in the instances of what you may call smears, what you call slime spots and so on, the diameter of the spot is about a quarter of an inch or so. Those are about all of the marks to which attention was called, as I recall now.

Mr. Schaefer: Yes, I think so.

The Master: There may have been some other little marks.

Mr. Schaefer: Those frayed ends of the paper to which attention was called were no longer than half an inch.

Mr. Rall: Q. These crush spots to which you refer are made of the same material, excluding any slime spots, as the rest of the container board, isn't that true?

A. Yes.

Q. And due to the thickness that you described of the pulp at a particular point, the difference in pressure and the different amount of moisture which varying thicknesses of the pulp will have, accounts for the difference in color between the crush spots and the cardboard, is that correct?

A. Yes, sir.

411 Q. How well acquainted are you with printing processes generally, apart from your own plant?

A. Not particularly acquainted at all.

Q. Do you know the composition of the apparently oily coating on magazines like the Saturday Evening Post, which are printed in colors?

A. I never analyzed such, but I understand that such things are paraffinaceous sprays of some sort.

Q. What is the purpose of that coating on the Saturday Evening Post and these other high speed magazine operations?

A. To prevent offsetting.

Q. And that is the process of offset you described this morning?

A. The one I discussed this morning uses a different material than paraffin. Sometimes we use a paraffinaceous spray to prevent offsetting.

Q. Now, the offsetting that you have described on the container blank occurs before the container is formed and dipped in paraffin, isn't that true?

A. Yes.

Mr. Gariepy: That is all, Mr. Fisher. You don't want to ask him any more, Mr. Schaefer?

Mr. Schaefer: Not at this time.

The Master: I would like to ask a question.

412 Q. If that red portion is ink, do you know whether that contains any microbes or bacteria?

A. I don't know, Master. I always understood from

what I have read that microbes and micro-biological life will not grow very well in an oily medium.

Q. Is the ink oily?

A. Speaking as contrasted with water, anything contrasted with water. The vehicle of the ink is loosely referred to as an oil.

Q. Then according to that, it would not make much difference whether the imprint of the ink on the outside of the container goes through the carton or not, as far as bacteria are concerned?

A. That is what my understanding would be, yes, sir.

Q. Although some of the ink might get mixed up with the milk, if the ink did go through the carton?

A. The offset, if any—this is an unusual condition, I should say—is of course protected further by the paraffin into which the container is dipped and coated.

Q. Let us assume now you have some ink on the inside of the container, either through the result of offsets or by going through the carton wall; so far as you know there would not be any bacteria that would get into the milk by reason of the presence of the ink in that way on the 413 inside of the carton?

A. There would not, no.

Q. In spite of the fact that the presence of ink on the inside might be objectionable for other reasons?

A. Yes, sir. I should say that the ink does not go through the paper.

Q. I say, one or the other?

A. Yes.

Q. You say there would not be any bacteria, so far as you know?

A. Yes.

Mr. Schaefer: I might say that the witness has not been qualified to answer those questions that the Master asked him, anyway.

The Master: Then we will sustain the objection to that.

Mr. Rall: There will be testimony on that subject.

Q. Can you demonstrate physically to the Master whether or not those faint and/or heavy red lines on the scoring line are really offsets? Take the ones that Mr. Schaefer showed you.

Mr. Gariepy: Take any one.

Mr. Rall: Q. Yes, take any one. Look through them, Mr. Fisher, and get one of the worst.

A. I will destroy this one now. Is that all right?

414 Q. That is all right.

A. (Witness tears blank apart.) From the printed place on the opposite, you can see there is no ink through there. The trace of ink is on this side.

The Master: Q. What?

A. The trace of ink, if any, is on that side.

Q. On the inside?

A. Yes.

Q. If you had drawn this off much thinner, I think we could have seen all of the red on the front.

A. I don't think so.

Mr. Rall: Q. Will you describe what you have just now done?

A. I took apart one of these printed milk bottle blanks—

Q. Was it one of the ones that Mr. Schaefer asked you as to whether the scoring mark showed some red?

A. Yes, sir.

Q. Then what did you do with it?

A. Tore out a piece of a panel and then tore it across the grain of the sheet, to show that the spot or the faint ink spot referred to as being on the inside of the score did not exist under that score.

Q. If that red spot on the scoring line occurred because of ink passing through the container board from the
415 printed surface, what would be the condition of the fibers of the board after you tore it, as you just did?

A. It would be colored throughout.

Q. So that the test you have made demonstrates that this red line is an offset and not ink that has soaked through the container board, isn't that true?

A. Yes, sr.

Mr. Gariepy: Mr. Schaefer, when do you want Mr. Fisher back here for any further cross? You said you were not through with him.

Mr. Schaefer: Let me look at the transcript and then I can tell you better.

The Master: When you can, let your adversary know.

Mr. Schaefer: Yes.

Mr. Gariepy: And will you also let us know if you want Mr. Koehne here?

Mr. Schaefer: No, I made no objection to the admission of that exhibit.

Mr. Gariepy: Exhibit 39?

Mr. Schaefer: Yes.

Mr. Gariepy: It is considered as received in evidence?

The Master: It was received.

Mr. Rall: Let me ask one more question, please.

416 Mr. Fisher, these fine frayed particles or fibers that

Mr. Schaefer referred to, describe as well as you can what they are. In picking up some of these container blanks Mr. Schaefer called attention to what he said were certain fibers, loose fibers. Will you describe those for the record?

A. Those loose fibers are in reality extremely tiny slivers of paper or paper board, which were formed when the sheet was cut out on the cutting press. They have the same composition as the entire board.

Q. If the container board from which those fibers came is sterile, then the fibers are sterile also, is that true?

A. Yes, sir.

Q. Did you describe the process by which the stamping or cutting of these container blanks takes place in your testimony this morning?

A. Not completely.

Q. What is it that causes these fibers that have been referred to?

A. In the cutting and scoring press there are knives set in a bed, which make contact with the sheet, against another plate on the press, so that the knives cut through as the sheet passes through the press. When it emerges from the other end of the machine, these tiny frays here are
417 largely knocked off by the operations the scrappers go through with the brush. In this instance there may be a few of those frays that have stayed on the carton.

Q. Under normal conditions what additional handling would there be to this pile of container blanks that you have been referring to?

A. After they have come from the cutting and scoring press and knocked out of the sheet, they are piled upon a flat, covered with clean paper, and then wrapped, as I showed in one of the pictures, and then are transferred to the glue machine, where they are fed, large bundles of them or piles of them are fed into the gluing machine, through the automatic application of the glue and the folding of the carton into flat shape.

Q. Has this pile of cartons been through the gluing machine?

A. No, sir.

Q. Just where in the process of manufacture did you remove these cartons or these flat blanks?

A. These were taken from a flat near the end of the gluing machine, where they were standing ready to be put through that machine.

Q. That handling operation, state whether the gluing operations would to any extent remove these fibers, loose fibers that we have been referring to?

Mr. Schaefer: I must object to leading the witness, again.

The Master: Reframe your question.

Mr. Rall: Q. After the gluing operation—well, I submit I have got a right to ask him what, if anything, that handling operation does to the fiber.

The Master: Go ahead and ask it. If there has been any suggestion, it is there already.

Mr. Schaefer: Yes.

Mr. Rall: Q. Mr. Fisher, does this gluing operation tend to remove the loose fibers that were found in some instance in this pile of flat cartons?

A. Yes, sir.

Q. How?

A. They are being whipped through the machine at a very high rate of speed and it creates a little draft as they pass along this line of the machine.

Q. And would the fibers respond readily to that draft?

A. I should think they would.

The Master: Q. Would a draft have a tendency to blow fibers onto the paper as well as off?

A. I don't think so, Master, because as the blanks start into the machine they are folded up; they are going very fast up to the point where they are folded, and after they are folded there is nothing ahead of them in the draft that would blow back on them, so to speak.

Q. There might be some fibers in the machine that had been blown off of the paper, isn't that true?

A. Well, that is true, yes.

Q. And the same draft that blows some fibers off might blow some other fibers on?

A. That would be a little difficult, because the carton—if I may explain it this way. The carton starts in the machine and a draft would tend to blow the fibers off. Immediately the carton is folded up that way, it would be rather remote for a fiber to find its way in between the folded carton.

Q. I am not talking about that. I am talking about fibers that have been blown off of one carton that might be around the machine somewhere, so that the next draft would blow them onto the open car on that follows, and then the draft would not blow out all of the fibers from the following carton.

A. I am sorry, I cannot answer that.

The Master: Go ahead.

Mr. Gariepy: That is all, Mr. Fisher.

•(Witness excused.)

420 Mr. Gariepy: Master, on direct examination of Dr. Sanborn on Monday, he testified concerning the Reading, as he called it, Pennsylvania, ordinance, with special reference to the delivery of milk to quarantined residences. I stated at that time, when the doctor was testifying and produced his copy of the ordinance, that I would secure a certified copy of the Reading ordinance, which I have here today, certified to by the clerk as of June 1, 1939. I offer it in evidence, with special reference to Sections 24 and 26, dealing with the subject matter of containers in the delivery of milk in containers to places under quarantine, referred to at the time that Dr. Sanborn was here.

I have shown a copy of this ordinance and certificate to counsel for the city.

The Master: Was the original document received in evidence?

Mr. Gariepy: The original document was received in evidence and I think Dr. Sanborn—

Mr. Horan: No. Portions of it were referred to, but it was not admitted in evidence.

The Master: All you ask now is to substitute this for the other?

Mr. Gariepy: Yes.

421 Mr. Schaefer: No. The ordinance has not been marked, as far as I know. I don't know. Maybe it has.

Mr. Rall: It has not been marked.

Mr. Schaefer: What was done with this: When the matter came up I agreed to stipulate that the Reading, Pennsylvania, ordinance required that milk to be delivered to quarantined homes had to be delivered in single service containers. I stipulated to it at that time.

The Master: Do you require anything more than that, Mr. Gariepy?

Mr. Gariepy: I think the meat of it ought to be in, and

I suggest that the court reporter copy those two sections that control the use, Sections 24 and 26.

The Master: Do you have any objection to that, Mr. Schaefer?

Mr. Schaefer: No.

The Master: That may be done.

Mr. Schaefer: This, of course, is subject to our objection as to materiality.

Mr. Rall: It is agreed that the offer of portions of the ordinance is accepted, subject to objection for materiality and relevancy.

422 (The excerpts from the certified copy of the ordinance referred to, of the City of Reading, Pennsylvania, passed December 1, 1937, are as follows:

"Section 24. Containers.

"(a) All pasteurized milk and milk products shall be placed in their final delivery containers in the milk plant in which they are pasteurized. All raw and certified milk and milk products sold for consumption in the raw state shall be placed in their final delivery containers at the dairy farm at which they are produced. Such container shall be a glass bottle, can or other receptacle approved by the Chief Food Inspector, sterilized as provided in this ordinance. Sterile bottles, or other receptacles made of paper, paraffin or other similar material, may be used as the final container, when permitted by the Chief Food Inspector, if manufacture and sterilization is accomplished as provided in this ordinance, in a way satisfactory to, and allowing adequate method of check or control by the Chief Food Inspector. Such final containers shall be leak-proof, and
423 tightly capped, closed or stoppered.

"(b) Milk for delivery to any house or location where a contagious disease exists shall be placed only in non-refillable containers, of a type and design approved by the Chief Food Inspector. Such containers shall not be again collected by the distributor, but shall be disposed of in a way satisfactory to the Chief Food Inspector. The Chief Food Inspector is hereby empowered to take any other steps necessary to prevent the spread of contagion from such sources through contaminated milk, milk products or milk equipment."

"Section 26. Report of Contagious Diseases Required. Every person engaged in the production, handling or sale of milk, or milk products, or handling equipment used in

connection therewith, shall immediately notify the Chief Food Inspector, who in turn shall immediately notify the Health Officer, of any case or suspected case of disease reportable to local Boards of Health under the regulations of the Pennsylvania State Department of Health, either in himself, his family, his employees, or their immediate family or associates, or within the establishment or premises where milk or milk products are produced, handled, possessed or sold, and at the same time shall suspend the handling, sale and distribution of the milk or milk products until authorized to resume by the Chief Food Inspector. Any person diseased, or suspected of contagious disease, or contact with a contagious disease, or otherwise likely to transmit a contagious disease, shall have no part in the production, handling, or sale of milk, milk products, or milk utensils, and shall not enter into or near the premises where such operations are conducted, until authorized in writing. The person responsible for compliance with the provisions of this section is the permittee whose milk is, or is in danger of, being affected.")

Mr. Garepy: Mr. Kasper.

CHARLES J. KASPER, called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

425 *Direct Examination by Mr. Garepy.*

Q. State your name, please.

A. Charles J. Kasper.

Q. Your address?

A. 2337 South 53rd Avenue, Cicero.

Q. Business and occupation?

A. Production manager.

Q. For whom?

A. Arabol Manufacturing Company, situated at 1835 South 54th Avenue, Cicero.

Q. What does the Arabol Manufacturing Company make?

A. Adhesives.

Q. Do they make the adhesives that are used by the plaintiff, Fieldcrest Dairies and by the Gardner-Richardson people here, in the fabricating of this container?

A. We supply Gardner-Richardson. I wouldn't know definitely whether it is used in that container.

Q. Do you supply it to Gardner-Richardson?

A. We do, yes.

Q. Do you know what the materials that are used in the making up of that adhesive that is supplied to the Gardner-Richardson people are?

A. I do.

Q. Do you know the formula for the making of that 426 adhesive?

A. I do.

Q. Will you tell the Master what materials are used in the making up of that adhesive?

A. We use water.

Q. What kind of water?

A. Regular tap water.

Q. Keep your voice up.

A. Water which is supplied by the city. We use sago, which we get from southern countries, Africa. It is a sort of a powder that comes from a tree. We use caustic.

Q. What kind of caustic?

A. Say, sodium hydroxide.

Q. What else?

A. Nitric.

Q. What else?

A. Nitric.

Q. What other substance do you use?

A. Sodium peroxide.

Q. How much of each is used in making up one batch, we will say, of this adhesive? How much water, how much sago flour?

A. I would say water 38 per cent.

Q. How much sago flour?

A. Just a minute. Let me take that back. I have it marked here. We have over nine thousand formulas and I don't remember them all. I will take that back. Water is 29 per cent and sago is 38 per cent.

427 Q. How much sodium peroxide?

A. Sodium peroxide is about 3/10 of one per cent.

Q. And what function does it perform in making up the finished product?

A. It acts as a bleach and I would also say it would be partly a preservative.

Q. Now, the nitrate, how much per cent is that?

A. The nitrate is used to neutralize the caustic, and the percentage of that is about ten per cent.

The Master: Q. Is any gum arabic used in this?

A. No.

Mr. Garipey: Q. What about this caustic?

A. Caustic. Let me see. It would be 19 per cent of caustic. It takes 10 per cent of acid to neutralize 19 per cent of caustic.

Q. What is the function of this caustic?

A. The caustic is to hydrolyze this sago, a sort of conversion action.

Q. What is the function of the nitrate? Can you tell the Master that?

A. It is to neutralize the alkali.

Q. When you pack up or make a batch of this material, do you put it in certain containers for shipment?

A. Yes, we put it in wooden containers.

Q. Made out of what?

A. Pine wood.

428 Q. And what do you put inside the container before shipping, when putting in a batch of material or adhesive that you make?

A. These containers, before they are filled, are waxed.

Q. With what?

A. Paraffin.

Q. Do you happen to know the temperature at which the paraffin is applied to the inside of the container, before it is filled?

A. I would say about 190 Fahrenheit.

Q. Is it shipped in that same container after the waxing and after the material is poured in, to the customer?

A. It is shipped in that, but it is non-refillable. It is a non-returnable container.

Q. It is a non-returnable container?

A. Yes.

Q. Every time you make a shipment of a certain batch of the adhesive, it is in a separate and new container when put up?

A. That is right.

Q. How long have you been supplying this adhesive to the Gardner-Richardson people?

A. I am sorry that I cannot answer that. I am not on the sales end of it. I am just on the production. I
429 cannot answer that.

Q. Have you sent samples of this to Dr. Sanborn at Geneva, for examination?

A. I believe we have.

Q. Mr. Kasper, can you tell us what this adhesive is used for in the trade, in the manufacture of paper containers?

A. Well, it is used a good deal in making up ice cream containers, butter containers, and a good many other things.

Q. What others than ice cream and butter that you know of are used in everyday experience?

A. Well, I would mention butter and ice cream and cheese, because it is a special formula that is recommended for such purpose. It is not used for an all-around glue, because it is too expensive a glue to use for shipping cases and so on.

The Master: Speak up.

The Witness: I say this glue is especially developed for that particular job.

Mr. Gariepy: Q. What about the adhesive that is used on soda straws that you use to sip drinks through at a soda fountain counter?

A. I would say the adhesive for that purpose, the 430 ingredients would be the same or, say, the adhesive is of the same characteristics.

Q. What about the adhesive used on paper drinking cups that you get at a counter, that you drink milk from, or hot coffee?

A. I would say that is the same.

Q. Are you acquainted with the adhesive used on cereal containers, such as Cream of Wheat and Shredded Wheat?

A. Yes.

Q. Is it used on those articles?

A. Most of those cartons will have an inner wrapper. It is used to seal the carton. Of course, they are of the same base, principally. Maybe corn is used as a base rather than sago or tapioca.

Q. Do you consider tapioca starch advisable, or what do you think of that?

A. Well, tapioca is not a starch. Corn starch is not considered as highly as tapioca.

Mr. Schaefer: Q. Not considered as what?

A. Corn. I say corn is not considered superior to tapioca. I would say tapioca is the better material to use.

Mr. Gariepy: Q. Why is sago flour used? Will you tell us that?

431 A. I would say it is in about the same class as

tapioca. It is a better grade and stronger and when used in an adhesive is superior to corn.

Mr. Gariepy: Cross-examine.

Mr. Schaefer: I will reserve cross-examination.

The Master: That is all. Cross-examination is reserved. (Witness excused.)

Mr. Gariepy: Mr. Stern.

MORTIMER E. STERN, called as a witness on behalf of the plaintiff, having been first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. State your name?

A. Mortimer E. Stern.

Q. Where do you live?

A. 1157 East 52nd street, Chicago.

Q. Business and occupation?

A. Factory manager for the National Adhesive Corporation.

Q. Located where?

A. 3641 South Washtenaw avenue, Chicago.

Q. How long have you been factory manager?

A. About ten years.

432 Q. Are you a graduate of any schools or colleges?

A. Yes. I am a graduate of Case School of Applied Science.

Q. That is at Cleveland?

A. Cleveland, Ohio.

Q. With what degrees were you graduated?

A. Bachelor of Science and Master of Science.

Q. How long did you follow that vocation and that training you received in school?

A. Well, I graduated in 1918. That makes twenty-one years.

Q. You are at the present time factory manager of the National Adhesive Corporation?

A. Yes, sir.

Q. Are you acquainted with the adhesive that is used by the Gardner-Richardson people in the Pure-Pak container?

A. Only superficially. It is manufactured by a competitive concern and I just know of it from hearsay.

Q. Do you know what it is made out of?

A. I just heard Mr. Kasper say.

Q. Do you know of the other adhesive that goes into the makeup of the Pure-Pak container, in the sealing of the bottom of it?

A. Yes, sir. We manufacture that.

Q. What do you call that adhesive?

433 A. You mean, what is it manufactured from?

Q. Yes.

A. It is manufactured from tapioca starch.

Q. And what are the other ingredients, other than tapioca starch?

The Master: Do I understand that this adhesive that he is talking about is used for a different purpose than that which Mr. Kasper was talking about?

Mr. Gariepy: That is right. His is used for the sealing of the bottom of the container.

The Master: Where is Mr. Kasper's adhesive used?

Mr. Gariepy: Mr. Stern's adhesive is used in the bottom here, in the machine itself. Mr. Kasper's is the light blue part which is used on the inside here when it leaves the Gardner-Richardson people, made by the Arabol Company.

The Master: What do they do with the Arabol? What do they paste with it?

Mr. Gariepy: He showed you in the fabrication this morning.

The Master: On the side, you mean?

The Witness: This seam right here.

Mr. Gariepy: That is right.

The Master: The up and down seam, while Mr. Stern's adhesive is used at the bottom?

434 Mr. Gariepy: On the bottom, and here (indicating).

The Master: I see. Is the adhesive that Mr. Stern has a lighter or heavier adhesive?

Mr. Gariepy: Let him tell that.

The Master: Q. Is it?

A. I cannot compare our adhesive with our competitor's, because I don't know what it is, except from hearsay. I can just tell you about my own.

The Master: Go ahead.

Mr. Gariepy: Q. What is your adhesive that is used in the bottom of this container, Plaintiff's Exhibit No. 2? What is that made up of?

A. It is made from tapioca starch.

Q. What else besides the starch?

A. Sodium nitrate.

Q. What percentage of sodium nitrate and what percentage of starch?

A. There is 29.6 per cent pure food tapioca starch and 5.3 per cent sodium nitrate.

Q. What about sodium benzoate?

A. There are some more.

Q. Yes.

A. There is 2.8 per cent salt, sodium chloride, and 11 per cent sodium benzoate.

Q. How much water is used?

A. Water, 55.4 per cent.

435 Q. And is that ordinary water or is it chlorinated water or what kind of water is it?

A. Lake water, tap water.

Q. What effect does this preservative have when applied to the paper container?

A. The preservative renders the adhesive permanently sterile, prevents it from decomposing or spoiling.

Q. Is there any peroxide used to sterilize the water?

A. Yes. The ingredients I gave you were the final ingredients in the adhesive, after manufacture. During the manufacture there are other chemicals used, but they react among themselves and form only the ingredients which I previously listed. For instance, we use caustic soda and nitric acid, the same as the Arabol Manufacturing Company uses, but the reaction, the chemical reaction between the caustic soda and the nitric acid forms the sodium nitrate, which I just listed, that I gave the percentage of. There is also hydrogen peroxide used, one-half of one per cent hydrogen peroxide.

Q. What effect does that have upon the product?

A. The hydrogen peroxide renders the water sterile and has an oxidizing effect upon the starch.

Q. Does excessive heat or excessive cold affect your product, as applied to the bottom of the container?

436 A. Excessive heat, of course, will burn it.

Q. And what about cold? Put it in the ice box, containing a quart of milk.

A. It would have no effect upon it.

Q. Are you acquainted with the adhesives used in soda straws at a soda fountain?

A. Yes.

Q. And are you acquainted with the adhesives used on paper drinking cups?

A. Yes.

Q. Ice cream cartons?

A. Yes.

Q. On food cartons for cheese and butter?

A. Yes.

Q. What type of adhesive is used, what quality of adhesive is used and supplied on those products?

A. The same general type as is used in fabricating the seam and bottom of this milk container. That is a vegetable adhesive, manufactured from either corn starch, sago starch or tapioca starch.

Q. Is this a special adhesive that is used in the bottom of this milk container?

A. We developed this adhesive especially for use on this carton.

Q. Have you had samples of your adhesive analyzed, Mr. Stern?

A. No, we have not. We sent a sample to the University of Illinois, at the request of Ex-Cell-O Corporation.

Q. When was that, Mr. Stern?

A. I believe it was about a year ago.

Q. Have you received back a copy of the analysis that they gave you?

A. We did not receive the copy of the analysis, although we were informed by the Ex-Cell-O Corporation that the—

Q. No, you cannot tell what they got.

A. No?

Q. You did not get it back?

A. We did not get it back.

Q. At what temperature is water used in making up this formula for the adhesive product? Is it heated at a high temperature, or what is it?

A. One hundred and twenty-five degrees Fahrenheit.

Q. And where is this tapioca flour used, or where does it come from, that you use?

A. It is imported from the far east and it comes from a root, similar to a potato.

The Master: Q. What is that? The tapioca?

A. The tapioca, yes. It is the same starch as used in tapioca pudding.

Mr. Garipey: Cross-examine.

Mr. Schaefer: I will reserve my cross-examination.

438 Mr. Garipey: You don't want to cross-examine Mr. Stern?

Mr. Schaefer: Not now.

Mr. Rall: Mr. Stern, one more question.

Q. To whom, specifically, at the University of Illinois, did you send the sample?

A. I don't recall. It was the Bureau of—

Q. Was it the Chicago department here?

A. No, it was down at Champaign.

Q. You sent it down to Champaign?

A. Yes.

Q. You don't know whether it was Dr. Prucha?

A. That sounds familiar, Dr. Prucha.

Q. P-r-u-c-h-a.

A. P-r-u-c-h-a, I believe that was the name.

Q. And how did you get that sample?

A. We removed it from a container of the adhesive.

Q. At random?

A. We opened up one of our—it was taken from storage and we removed the sample from it.

Q. What I am trying to get at is this: After you got the order did you then make up the sample?

A. No. We only make this up once every two or three months, and when we received the request for the sample we merely opened up a container of adhesive.

439 The Master: Q. You did not take any particular container?

A. No.

Q. Just took it at random?

A. Just took it at random and opened that container and filled the bottle.

Mr. Gariepy: One more question.

Q. This adhesive, after it is made up and is to be shipped away, how do you protect it?

A. It is shipped in a waxed wooden container.

Q. Made out of what?

A. New gumwood barrels.

Q. And are they paraffined?

A. They are paraffined.

Q. At what temperature do you paraffin yours?

A. We don't paraffin them. We purchase them from one of the large barrel manufacturers in Chicago.

Q. And are they re-used by you people?

A. Never.

Q. Never re-used?

A. No.

Q. Why do you use the paraffined gumwood container?

A. Well, they are a very satisfactory container and they are clean and practically the color of that wood, of this paper.

Q. Referring to the paper board here?

A. They are a very fine looking container, smooth 440 on the inside, and then they are waxed, to seal the pores of the wood. It is the same type of barrel as condensed milk is shipped in from the milk dairies.

Q. What is your opinion as to whether the peroxide and the preservatives that are used in the form of antiseptics will keep this adhesive sterile or not?

A. We know from experience that we manufacture the adhesive and we have had lots of it around for months, and it does not spoil or deteriorate.

Q. Is there anything in this adhesive that you could consider a culture for bacteria?

Mr. Schaefer: That is objected to.

Mr. Gariepy: He is a chemist.

The Master: I don't think he is.

Q. You are not a chemist, are you?

A. I certainly am.

Mr. Gariepy: A graduate of the Case School of Applied Science.

Mr. Schaefer: That still does not qualify the witness to testify to that.

The Master: Do you feel yourself qualified to answer that question, Mr. Witness?

The Witness: Yes.

The Master: I will let him answer.

The Witness: What was that question again?

441 (Mr. Gariepy's last question was read by the reporter as above recorded.)

The Witness: A. There is nothing that would support bacteria life in the adhesive.

Mr. Gariepy: Q. Do you know whether there is such a substance in ice cream known as gelatin?

A. To my understanding the gelatin is used in the manufacture of ice cream to make the dipper of ice cream firm when it is dipped out of five-gallon containers or whatever they get it out of.

Q. And is that gelatin a culture?

A. Gelatin is used by biologists to grow bacteria.

The Master: Pardon me. Will you please let me interrupt there?

Q. Talking about that, you said you were a chemist?

A. Yes.

Q. Did you learn anything about bacteriology in your course as a chemist?

A. Well, we learn a lot of things.

Q. I know you learn a great many things.

A. I am not a bacteriologist, but I know a great deal about bacteria. I have to.

Q. You know a great deal about it, but you do not qualify as a bacteriologist, do you?

A. No, not as a bacteriologist.

442 The Master: I will strike that answer then.

Mr. Schaefer: How about the preceding answer?

The Master: That is the one I am striking.

Mr. Gariepy: Will the reporter read the one that is stricken?

(The record was read as follows:

"Mr. Gariepy: Q. Is there anything in this adhesive that you could consider a culture for bacteria?

"A. There is nothing that would support bacteria life in the adhesive.")

Mr. Gariepy: Is that what is stricken, Master?

The Master: Yes. He is not a bacteriologist.

Mr. Gariepy: Q. You said that a certain milk was shipped in these gumwood barrels. Do you mean evaporated or condensed?

A. It is my understanding that milk used by bakeries, for instance, in the making of their bread—

Q. That is powdered milk, is it not?

A. No. A lot of it comes in in liquid form, because for some purpose we buy hundreds of milk barrels which have previously contained milk in them.

Q. What about the powder containers that the baker uses, such as powder for lemon pie and powder for other pies that they make up? Do you know about that,
443 whether they come in these containers or not?

A. I couldn't say.

Mr. Rall: Q. Are the containers that you ship this adhesive in new?

A. As I said previously, they are new gumwood barrels, in which a coating of wax is used.

Q. And they are not the barrels you have just referred to, that milk has previously been in, are they, Mr. Stern?

A. No, I just point that out, that we use the same type of barrel as that new milk is shipped in at the present time.

444 - Mr. Gariepy: Q. What sanitary measures are employed in your plant with regard to the men working in making up this formula, Mr. Stern, in making up this adhesive, I should say?

Mr. Schaeffer: If the Master please, I don't like to make this type of objection, but I would like to ask counsel to stop leading these witnesses.

Mr. Gariepy: That is the first objection you have ever made to my leading him. I thought I was quite careful, in fact, Mr. Schaeffer.

The Master: Go ahead.

Mr. Gariepy: Q. Mr. Stern are there any sanitary measures, rules or regulations employed in the plant in regard to the making up of these adhesives that you have just testified about?

Mr. Schaeffer: There is another objection, on the ground the question calls for a conclusion of the witness.

The Master: Let him answer it.

A. We require our men to practice the usual sanitary measures.

Mr. Gariepy: Q. What are they?

A. Well, the men must wash their hands and wear clean clothes.

445 Q. What regulations do you have carried out with regard to them?

Mr. Schaeffer: The same objection.

The Master: If any.

Mr. Gariepy: Q. If any?

A. We have none other than I have just mentioned.

Q. Have you facilities at the plant with regard to toilet facilities?

A. We have a modern clean lavatory.

Q. And is there just one for the whole group of employees, or how many do you have?

A. We have one large lavatory for all of the men employed in the factory.

Q. How many are employed?

A. About twenty-five.

Q. Do you have one separate for women?

A. We would only have women in the office.

Q. Have you a separate one?

A. Surely.

Mr. Gariepy: You may cross-examine.

Mr. Schaefer: I still will reserve cross-examination.

Mr. Gariepy: All right.

The Master: Subject to recall again.

(Witness excused.)

446 Mr. Hall: I would like to recall Mr. Kasper.

The Master: Well, he is right here.

C. J. KASPER, having been previously sworn and having testified, was recalled and testified further:

Direct Examination by Mr. Rall.

Q. You are the same Mr. Kasper who was just on the stand before Mr. Stern?

A. Yes, sir.

Q. And after you left the stand I asked you whether you were certain of your own knowledge that your testimony about the containers in which your adhesive was shipped?

A. Yes.

Q. Will you explain what the extent of your knowledge is regarding these containers yourself, and if you are not familiar with it, who is familiar?

A. I would like to correct myself on the statement I have made there in regard to the wooden containers. There are times when a customer will specify that he will want a steel barrel rather than a wooden barrel. These steel barrels are coated, and as I understand, these drums are sold also to people that sell milk.

Q. Coated with what?

447 A. That I couldn't say.

Mr. Schaefer: I move to strike that last answer of the witness.

The Master: I will let it stand, he knows there is a coat of some kind.

Mr. Rall: Q. Who in your organization can tell us about specific shipments in regard to the Richardson Company of the adhesive you described?

A. I would say the Division Manager, Mr. R. P. Bieler.

Q. Mr. R. P. Bieler, Division Manager?

A. Yes.

Q. Are you going to be in the city for the next few weeks so that you will be able to return here?

A. I sure will.

Mr. Rall: That is all.

(Witness excused.)

Mr. Gariepy: That is all the plaintiff has today, Master.

The Master: That is all the plaintiff has to put on today?

Mr. Gariepy: Yes.

The Master: Then we will adjourn without date until we hear from respective counsel.

448 Mr. Rall: There were certain exhibits that you had of these blanks. Are these marked?

Mr. Schaefer: Yes.

Mr. Rall: Defendants' exhibits 3 to 6, inclusive. Do you desire to offer them?

Mr. Schaefer: They have been admitted already.

Mr. Gariepy: Not number 3.

Mr. Schaefer: 3 has not been admitted?

Mr. Rall: The "identification" mark is removed.

Mr. Schaefer: I would like now to offer defendants' exhibit 3, so there won't be any misunderstanding about it.

Mr. Rall: I have no objection to defendants' exhibits 3 to 6 inclusive.

The Master: Just mark them as received.

Mr. Gariepy: In view of the fact that defendants' exhibit 3 was admitted, I will now offer plaintiff's exhibit 3 which was marked by the same witness who marked defendants' exhibit 3. I now offer 40 in evidence.

Mr. Schaefer: No objection.

The Master: It may be received.

(Said cardboard blank so offered and received in evidence was marked "PLAINTIFF'S EXHIBIT NO. 449-40" and is attached hereto and made a part hereof.)

Mr. Schaefer: There is one thing further, if the Master please.

The Master: What is that?

Mr. Schaefer: This case was set for hearing today, for the testimony of Dr. Rice of Philadelphia. We went to Philadelphia once to take Dr. Rice's testimony.

Mr. Gariepy: Lewisburg, Pennsylvania.

Mr. Schaefer: We went to Philadelphia once to take his deposition and he didn't appear at that time. The

case was set specially today to suit his convenience and he hasn't appeared today. I know from discussions with counsel for the plaintiffs in the two cases that he did not appear because counsel for the plaintiffs decided that they didn't want his testimony.

The Master: Today?

Mr. Schaefer: As I understand the letter that I received from Mr. Gariepy on that subject, they don't want his testimony today or at any other time. It seems to me that if Dr. Rice is an important enough witness so that we should go to Philadelphia to get his testimony, it is important for the Master and for the defendants to have 450 his testimony in the record here, and I would like to

be clear as to whether or not the plaintiffs intend in the future to call him. The reason stated in the letter which I received was that his testimony would be merely corroborative on these points.

The Master: What is your understanding now as to the certain points? Are you going to call him?

Mr. Schaefer: No. My question is whether there is to be any further testimony on those points. That is the reason explained for not calling Dr. Rice, that on certain points we apparently have sufficient testimony without calling Dr. Rice.

The Master: How is it important to you to know whether they are going to produce other witnesses?

Mr. Schaefer: Well, if other witnesses are not going to be produced, I don't much care whether Dr. Rice testifies or not. There is a statement in Mr. Gariepy's letter to me which I found—after extensive conversation—that he (meaning Dr. Rice) “ . . . can and will add little to the testimony already given by Dr. Sanborn with regard to paper caps, absorption and the other items referring to the Pure-Pak Container.”

If that is the reason for not calling him, and which 451 we understand—that there will be no other testimony offered on those points—if so I don't care particularly whether he is called or not; but, if the reason we are not getting Dr. Rice is because we have enough testimony, and if the reason we are not getting him is that we have enough testimony on those points, then I am satisfied not to call him; but if the intention is to call other witnesses to testify on those same points, then I am a little curious as to why Dr. Rice is not here.

Mr. Gariepy: I will answer you by saying that Dr. Rice informed us on the 'phone that there are a lot of these tests taken from Dr. Sanborn's own reports and that he went to Geneva to work with Dr. Sanborn, and his experience is the same; but I don't mean that because of the fact that if he were here he would testify to the same things, that the plaintiff is going to be limited as to putting in any experiment or research work that we feel necessary. In other words, if he worked at Geneva with Dr. Sanborn on this thing and took Dr. Sanborn's theories and Dr. Sanborn's results and went to work and built up what he could on that subject, I don't see any logic in having him tell us about that, if Dr. Sanborn has already told us; 452 but, if we find other witnesses that have made advances in the science, tests and research work on this subject, I don't want to be precluded from bringing that in. That is the sum and substance.

The Master: You don't care to call Dr. Rice?

Mr. Gariepy: That's right.

The Master: I don't see how you can limit them in their testimony.

Mr. Schaefer: I have this thought in mind, then: I don't know what Dr. Rice will testify to, so far as I know, as no member or representative of the Board of Health of the City of Chicago has talked to him at any time since this case was instituted. I would like to have Dr. Rice called and I don't feel that I should have to vouch for his testimony. I would like to have him called as a Court's witness.

The Master: I don't suppose they would have any objection to having him called.

Mr. Rall: With the other prospective witnesses that we have who made independent research, it don't seem worth while to us to have Dr. Rice come here today, with the possibility that we wouldn't be able to complete his testimony. Dr. Sanborn took just about twice as long as we had expected.

Furthermore, I wrote my client a letter yesterday in 453 which I said that the City had shown a great interest in Dr. Rice and that I predicted that before this lawsuit was over we would see Dr. Rice appearing on the witness stand as a witness for the City of Chicago.

Mr. Schaefer: How did we show that interest, Owen? We went to Philadelphia. What other interest did we show?

Mr. Rall: Well, we understand that he was written to by someone purporting to represent the City.

The Master: There is nothing pending before me now. The witness has not been called, and if they don't want to call him, and if the City desires to call him, they are at liberty to do so, and I assume that if the City wants to call him as a Court's witness, that the other side will not object.

Mr. Rall: I don't think we ought to be committed in advance of his appearing here, to whether or not he is antagonistic or friendly to one side or the other.

Mr. Schaefer: I ask now that he be called as a Court's witness.

Mr. Rall: I object on the ground there has been no showing made that he is antagonistic to the City.

454 The Master: I don't think it makes much difference if you call him, I will let you examine him as an adverse witness if you want to.

Mr. Rall: He is not here and I submit that the Master ought not to rule. He has asked us whether he understands we are going to offer some more testimony on some points Dr. Sanborn touched on, and our answer is that we do intend to offer it, and we think it is better than Dr. Rice's investigations and closer to home so as not to justify the expense of bringing him here today.

The Master: If you want him here I will let you bring him here, and call him as a Court's witness, you to pay the expense of bringing him here—if you want that, any time you want to subpoena him. I don't know whether your subpoena will bring him here, but if you want him in here and can get him here, we will let him come in as a Court's witness.

Mr. Schaefer: If the Master would ask him to come. We don't care what he is going to testify to, but if the Master would ask him to come, and pay him the amount that the plaintiffs were going to pay him, we will undertake to pay that amount and to pay his expenses, whatever

he wanted, unless the plaintiffs want to share that
455 expense if he is called as a Court's witness; but I don't want to get into communication with him now and have it said that I have been in communication with Dr. Rice. I would like to have the Master fix the time when he may come.

The Master: I am perfectly willing to do that and I

don't think the other side cares much whether you bring him in that way or not.

Mr. Rall: That is quite correct.

The Master: They said they wouldn't call him, first, because it is expensive to bring him here.

Mr. Schaefer: It was expensive for us to go over to Philadelphia.

The Master: They say that they have arrived at the conclusion that his testimony would be largely corroborative or a repetition of Dr. Sanborn's testimony. That is the reasons they give now. If you want to bring him in here, I can't see where they can have any objection.

Mr. Rall: No objection.

Mr. Schaefer: Will the Master write him, if we can get his name and his address? Will the Master communicate with him?

The Master: Yes, if you want him, I will be glad 456 to do it.

Mr. Schaefer: Yes, sir, we do.

The Master: Give me his address.

Mr. Gariepy: His address is Bucknell University, Lewisburg, Pennsylvania. But, he is going to Geneva.

The Master: Give me his initials.

Mr. Rall: John W. Rice.

Mr. Gariepy: He will be at Geneva until the latter part of August and will be in Canada two days after leaving there. I don't know where he will be next. His name is John W. Rice, Professor of Bacteriology, Bucknell University, Lewisburg, Pennsylvania.

The Master: That is all. We will adjourn without date.

(Thereupon, at 4:00 o'clock p. m. on June 5, 1939, the further hearing in the within cause was continued without specific date.)

Monday, June 26, 1939.
10 o'clock A. M.

Met, pursuant to adjournment.

Present:

Mr. Gariepy,
Mr. Rall,
Mr. Schaefer,
Mr. Horan.

458 JOHN W. RICE was called as a witness and, being first duly sworn, testified as follows:

Examination by the Master.

Q. Please state your name.

A. John W. Rice.

Q. Where do you reside?

A. My permanent home is in Louisburg, Pennsylvania.

Q. Do you have any official position with any institution?

A. I am professor of bacteriology, Bucknell University.

Q. You were requested by me to appear here today as a witness concerning the subject matter of this suit?

A. Yes, sir.

Q. You are here and I will turn you over for examination to Mr. Schaefer of the Corporation Counsel's office of the City of Chicago.

Examination by Mr. Schaefer.

Q. How long have you taught at Bucknell, Doctor?

A. Since 1916.

Q. Continuously?

459 A. With the exception of a break during the War, when I was in the army service.

Q. Have you had any teaching experience in any other institution?

A. I taught summer sessions at Columbia University and at Juniata College.

Q. Where is that, Doctor?

A. That is at—I feel like calling it Juniata all the time, but it is near Juniata. I cannot say the name of the place right now.

Q. What state is it in?

A. It is in Pennsylvania. Huntington, Pennsylvania, that is right.

Q. At Huntington, Pennsylvania?

A. Yes.

Q. And all of your work, all of your teaching work has been in bacteriology?

A. General bacteriology in the beginning and then bacteriology after I got my doctor's degree.

Q. And where did you get your doctor's degree?

A. At Columbia University.

Q. In bacteriology?

A. In bacteriology, yes.

Q. Where did you do your under-graduate work, Doctor?

A. Part of it at Columbia University and part of it at Bucknell; well, practically all of it at Bucknell, and the master's degree work at Columbia University.

Q. Have you done any bacteriological work in connection with paper containers, Doctor, for milk?

A. I have.

Q. Will you state what that work has been?

A. The work has been in the nature of the determination of bacteria found in the paper or fabric from which the containers are made; some rinse test work on the containers themselves, and cultural work in the way of broth cultures.

Q. When did you begin that work, Doctor?

A. On paper containers I began in 1931.

Q. And you worked at it not continuously, I suppose, since then?

A. No, sir.

Q. But you worked at it fairly steady during the intervening years?

A. Of course, it had to be spliced into my teaching program, which meant that there was some work going on practically all the time, with the exception of the time that I was in the hospital eight years ago which took about a year and a half to get rid of.

Q. Where was that work done in the main, Doctor?

A. Most of that work was done at Bucknell University.

Q. Are you engaged in that work now?

A. Yes.

Q. And where are you engaged in it now?

A. I am working at Bucknell University part of the
461 time and at the New York State Experimental Station,
in the Agricultural Experiment Station at Geneva,
during the summer months.

Q. Have you worked at the experimental station any
summer other than this summer?

A. Last summer, for two months.

Q. From the work which you have done, Doctor, have
you formed an opinion as to what is the principal source
of contamination, bacterial contamination, of paper con-
tainers for milk?

A. The principal source, I would say, is in the fabric
that goes into its manufacture.

Q. What about the water supply? Do you include that
in the fabric?

A. Yes. You have to prepare your paper from water.
It is a floated process.

Q. The principal source is the pulp, plus the water?

A. Yes.

Q. Efforts are being made to control both of those
sources of contamination, are they, Doctor?

A. Yes, they are.

Q. How much water is used in paper plants; do you
have any notion?

A. Well, I have not in connection with the paper going
into container board, but I have with reference to the
462 paper going into bottle cap board. In one case there
was 1,200,000 gallons used in one plant a day, and in
the other one 800,000 gallons a day.

Q. In your opinion would the amount of water used
by plants which manufactured paper board for containers
be greater or less?

A. I can't answer that. I presume it would be about the
same.

Q. When you analyzed the water used in paper mills
did you encounter bacterial contamination?

A. Yes.

Q. What was the nature of the bacteria that you en-
countered there?

A. Well, I will have to speak entirely with reference

to the bacteria in connection with bottle cap board, because I made no plant surveys, as far as paper container board is concerned. Dr. Sanborn is doing all of that work at the station.

Mr. Garipey: Mr. Schaefer, may I interpose an objection; that the Doctor confine himself with reference to the container in question here and the mill or plant where these experiments or findings were had.

Q. Can you name those, Doctor, what container and what mill it was you have reference to in your state-
463 ment?

A. I said I had no experience with mills in connection with the manufacture of board going into containers.

Q. No mills at all?

A. No.

Q. With regard to this water that Mr. Schaefer just asked you about—

A. I said at that time that that was in connection with the manufacture of bottle cap board, not paper container board.

Mr. Schaefer: Q. Now, Doctor, how does the manufacture of bottle cap board differ from the manufacture of container board?

A. Practically in no way, as far as I understand the situation.

Q. Did you ever encounter any E-coli in the water at the calender stacks at any bottle cap board manufacturing plant?

A. Yes, sir.

Mr. Garipey: I am going to object, unless he tells what plant he has in mind, because we are only concerned with the Cherry River Paper Company's product here. That is the only inquiry we are making. Things he might have found, Master, at some other mill that have no relation to the matter in issue are not material here.

464 The Master: What mill was it?

Mr. Schaefer: May I say just a word here, Master? It may be that the witness does not want to disclose the particular mill, although I understand that the condition has been rectified. My point is here that we are not limited to one particular mill, and the witness has testified that the process of making paper board for bottle caps is substantially the same as the process for making paper board for containers.

The Master: Your examination is designed to show that the conditions which he found may be found in other places than the one that he is talking about?

Mr. Schaefer: Yes.

The Master: It may be that the circumstances at this particular place were exceptional and I assume they have a right to go into that. Of course, I might let you go ahead and examine and let Mr. Gariepy cross-examine and bring out any exceptional facts, if he desires.

Mr. Gariepy: My point is, Master, that these general statements in here are not instructive nor informative to you, or counsel or me, unless they pertain to the matters in inquiry here. They are general conclusions and general statements.

465 The Master: I am not so sure about that. It may be that if paper board is permitted to be used for containers, the City might say, "We don't have to go ahead and examine each particular company to find out every time whether its product is free from bacteria or not. We just want to find out whether there is a general condition here which may require and justify us in framing general rules." Now, if the condition is sufficiently imminent or possible or probable in these cases, there may be cases where the City has to go ahead and examine in each instance the quality and the kind of manufacture and the kind of water, in order to ascertain whether there are bacteria in the product.

Mr. Rall: The problem is no different than with bottle caps or with bottles. Any of those things are subject to contamination; everything on earth is. The fact he may have found contamination somewhere would not prove either that the City has control over this or that our product was contaminated.

The Master: You may cross-examine on that objection.

Mr. Rall: If this lasts a day and a half, or any such length of time as that, it seems to me it would make
466 it clearer if, as the witness goes along, he tells where he found those conditions.

The Master: Dr. Rice, do you have any objection to stating where you found those conditions?

The Witness: I think there is no objection to that.

The Master: Go ahead and let him state.

The Witness: One case was at the Fulton plant of the Oswego Falls Corporation and the other was Utica. I

am trying to recall the name of the corporation, which I right now cannot do.

Mr. Schaefer: Now, will you read my last question?

(The record was read by the reporter as above recorded.)

Mr. Schaefer: Q. What is E-coli, Doctor?

A. May I give you the information on this other company?

Q. Yes.

A. It is the Foster Paper Company.

E-coli is an intestinal organism which is used as an indication of pollution of water supply.

Q. What type of pollution does it indicate, Doctor?

A. It usually indicates foecal contamination.

Q. E-coli is a form of bacteria that inhabits the intestinal tracts of man and animals?

467. A. Yes.

Q. In the course of your investigation did you ever have any occasion to run parallel tests of the bacterial counts of milk samples in paper containers and in glass bottles?

A. Yes.

Q. When was that, Doctor?

A. The purpose of the tests—

Q. When?

A. When?

Q. Yes, when was that?

A. Those tests were run in 1934 and 1935, I think, on the general setup, and in 1937 and 1938, on the more recent studies.

Q. Why did you run parallel tests in paper and in glass?

A. To discover what kind of comparison exists between bacterial counts in milk housed in these two types of containers.

Q. Why did you use pint glass milk bottles?

A. I didn't get that.

Q. Why did you use pint glass milk bottles in those tests?

A. On one series of tests there were pint glass milk bottles used because they were taken from my laboratory, sterilized by steam pressure, and I knew they were sterile. On the first setup we used commercially cleansed and sterilized milk bottles, which turned out not to be cleansed
468 and sterilized properly by control tests.

Q. Why did you use glass bottles at all?

A. We had to have some basis of comparison, and on the basis of usage I suppose that test was made.

Q. What do you mean by the basis of usage?

A. The glass bottle has been accepted as a container for the milk.

Q. That is, the glass bottle is the standard container for milk?

A. I hesitate to use the word "standard."

Q. You have used it in describing these tests, have you not, Doctor?

A. I have used the word, but I have come to modify my opinion since.

Q. Will you describe those tests, Doctor?

A. In those tests making comparative counts of milk in sterile glass containers and paper containers, the glass bottles were prepared in my laboratory and properly cleansed and then subjected to a steam pressure of 15 pounds, to render them sterile. They were taken in closed condition to the plant and samples were taken in these containers parallel with the samples that were taken from the bottling machine, which was designed to bottle milk in paper containers alone, and from those samples drawn they were taken, in iced containers, to my laboratory and comparative counts made by standard methods.

469 Q. Now, the other tests where you used commercially cleansed glass bottles.

A. There the cleansing was done in the milk plant using a three per cent alkali wash and they were subsequently steamed. There was no control, however, as to the time of steaming.

Q. And you ran parallel tests in that last experiment with how many types of paper containers?

A. Just one. The last test was the one type of container.

Q. Have you ever run any tests in which you used glass as a standard and more than one type of paper container?

A. Yes, sir.

Q. Will you describe that test?

A. That was the series of tests in which there were at least four types of milk containers used made of paper board. Two of those were of the open type, meaning that they were conical containers, with the opening exposed to the air or allowing air exposure. Two of them were factory sealed.

Q. What did your grand totals and averages as a result of those tests show as to whether the glass bottle or the paper container was the greater hazard in the 470 possible contamination of milk in those containers?

Mr. Rall: Just a minute. Are you referring to the commercially sterilized or to the other one?

Mr. Schaefer: I am referring to the last tests, which was the commercially sterilized glass.

The Witness: On the commercially sterilized glass—

Mr. Schaefer: Q. I am referring, Doctor, to the test that you reported to the sixth annual meeting of the Pennsylvania Association of Dairy and Milk Inspectors.

A. That is the older test, where there were four types of containers used.

Q. Yes. I am referring to that test.

A. In that case practically all of the comparative counts in glass were lower than the counts in paper containers.

Q. Are you satisfied as a bacteriologist with paper containers in their present stage of development?

A. No.

Q. Is there a problem in connection with the application of paraffin to paper containers?

A. Yes, there is.

Q. What is that problem, Doctor?

A. It is a matter of adequate coverage of the milk contact surfaces.

471 Q. Will you describe that a little more in detail, Doctor?

A. On the application of a moisture-proofing material to paper fabric, one of the important things is to see that the moisture-proofing is uniformly applied to at least the inner surface of the container where it comes in contact with moisture in a great concentration than it would on the outside.

Q. And, generally speaking, has an even application been achieved?

A. Not generally speaking.

Q. In making cultures of paper board used for paper containers, Doctor, have you ever encountered any off-odors from the culture plates?

A. Those off-odors that I have described once upon a time were in connection with bottle cap cultures.

Q. Have you ever encountered any in connection with paper board or paper containers?

A. Not that I recall.

Q. Have you ever made any effort to find any?

A. Yes.

Mr. Schaefer: That is all.

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Examination by Mr. Gariepy.

Q. Doctor, you just answered Mr. Schaefer's question with regard to the satisfaction or lack of satisfaction that you had with paper containers. You said that you were not satisfied with the progress made in the matter of the manufacturing of paper containers. Calling your attention to your recent article read at the Fourteenth Annual Convention of the Pennsylvania Association of Dairy Sanitarians contained in this pamphlet, is that your article and your pamphlet?

A. Yes, sir.

Q. I will call your attention to page 46 thereof, and do you recall this statement by you:

"When considered from the public health angle, these paper containers are superior to the glass milk bottle, since there is no chance to spread infectious disease organisms from household to household by a single service container."

Do you recall that statement?

A. Yes, sir, and I still hold to that. I think you misquoted—I beg your pardon.

Q. No, I am reading from your conclusions here.

473 A. No, I mean you misquoted in the question. The question, as I understood it from Mr. Schaefer, was as to whether or not I was satisfied bacteriologically with the present status of paper containers.

Q. And you said you were not satisfied?

A. And I said I was not satisfied.

Q. Are you satisfied with the bacteriological condition of glass containers?

A. No, I am not.

Q. How, in your opinion, does the paper container measure up to the glass container?

Mr. Schaefer: I object to that, if the Master please, for this reason: The condition of the glass or paper container, as I understood the witness to testify, depends on the method in which the glass container is handled and the cleansing or sterilizing process to which it is subjected. In

the absence of testimony to the effect that the witness is familiar with that process and the condition of the containers in the City of Chicago, I think any question on that subject would be objectionable.

The Master: I will sustain the objection.

Mr. Gariepy: May we call your attention to the fact that Mr. Schaefer's questions were asked of this witness without regard to any territorial limitation in relation 474 to the paper bottle and glass bottle. I made an objection as to that a while ago on the ground of having us confine ourselves to the paper in question here, and you overruled me.

The Master: He asked about the glass container.

Mr. Gariepy: The record will show that it was in regard to the counts in the glass and the counts in the paper. If you are going to take glass as an acceptable standard that the City is now permitting to be used, we have certainly got a right to inquire into the matter of that standard, regarding either glass or paper; otherwise we have no scale or measuring guide.

The Master: You might ask him in regard to the particular cases he has before him for investigation. You might confine your questions to that. But you are asking him a general question now. It may be that the conditions as to glass containers in the City of Chicago are very much similar to those in other places, or vice versa.

Mr. Gariepy: I will ask him that.

Q. Do you know anything about the condition as to cleaning glass containers in the City of Chicago?

A. I do not.

Q. Then your answers that you gave Mr. Schaefer 475 in regard to glass and paper containers are based on no knowledge regarding conditions in Chicago?

A. That is right.

Q. Are you familiar with the conditions in regard to the methods and means or technique employed in cleaning glass bottles as used in the City of Chicago in regard to milk?

A. No, sir.

Q. Calling your attention, Doctor, further to pages 46 and 47 of your report, which I showed you, given to the Pennsylvania Association of Dairy Sanitarians, Fourteenth Annual Report, entitled, "Recent Studies of the Bacterial

Content of Paper Milk Containers, John W. Rice, Ph.D.",
is this your statement:

"—a standard milk container in the fluid milk market on the distinctions of high inherent sanitary quality and the sound public health principle involved in the single-service container."

A. Yes, that is my statement.

Q. Do you still believe that to be true, Doctor?

A. I believe it is true, yes.

Q. Did you further make this statement in your conclusions with regard to this 47 page report and these studies concerning the comparison of the glass bottle with 476 the paper bottle:

"Careful checking of every phase of the development of the container by bacteriological methods have contributed to the production of a paper milk container which compares very favorably with sterile glass bottles as a sanitary receptacle for milk." Is that your statement?

A. Yes, sir.

Q. Do you still believe that to be true?

A. Yes, sir.

Q. What do you mean by the use of the word "sterile" in that statement in your conclusions, Doctor?

A. That is absolute sterility.

Q. And is there any such thing in the milk bottle industry or in the milk industry where bottles are used as absolute sterility?

A. Yes, there is that possibility.

Q. And is that commonly found daily in the use and sale of milk at retail or wholesale, absolute sterility?

Mr. Schaefer: That is objected to.

Mr. Gariepy: He has used the word. We ought to have the right to understand what he means.

Mr. Schaefer: But we are dealing with the conditions in the City of Chicago.

477 The Master: Outside of Chicago, in cases that have come to his knowledge.

Mr. Gariepy: I will repeat the question.

Q. Is there any such thing that you have found in the daily use of milk bottles in the milk industry as absolute sterility?

The Master: I will sustain the objection. That is too broad. Let us confine the question to cases that have come under his observation.

Mr. Gariepy: Q. All right, taking cases that have come under your observation, Doctor, taking milk from the dairies, your samples, in the ordinary course of events in the dairies?

A. I have found absolute sterility.

Q. In how many cases and where?

A. The location was in the milk control area of which I am president, in central Pennsylvania.

Q. And when was that?

A. This was last May and about fourteen months previous to that. A complete survey.

Q. Do you know anything about that condition of sterility with regard to glass milk bottles in Chicago?

A. I do not.

Q. Have you made any study in regard to the conditions here?

A. I have not.

The Master: Q. But in your district you say that 478 bottles were absolutely sterile?

A. Some bottles were absolutely sterile.

Q. In your district did you find that paper containers were absolutely sterile?

A. That question hardly applies, Master, because there is only one dairy in the entire district using paper containers.

Q. Taking that one dairy, did you find any of their containers absolutely sterile?

A. That is the same container that I am reporting on right here.

Q. I don't remember the results.

A. You see, it is impossible to get a paper container that has been put in a tray and make a sterility test upon it, because it has already been used as a package for milk, so unless you go to the plant and have blanks made on the same machine, you have no possibility of comparison.

Q. Did you do that?

A. No, sir, I did not, in this case.

Mr. Gariepy: Q. Doctor, what paper board did you perform these tests on, when you made answer to the inquiry that Mr. Schaefer gave you on counts?

A. In that report you are quoting there it is Cherry River board.

479 Q. And with regard to Cherry River board, I call your attention to page 28 of your report, where you make this statement:

"The first stock board for these closures—"

By closures I assume you mean the containers—

A. N. the closure is the portion of the container which is placed in the head of the container at the time of the filling of the package on the filler, the milk filler.

Q. Is that the two and a half inch scored part that flops over, that is, the head of the container?

A. That is the head of the container, yes. That was made by another company.

Q. That was not made by Cherry River?

A. That was not made by Cherry River, no, sir.

Q. Then does this statement apply to Cherry River board:

"The first stock board for these closures which was submitted for test was practically twice as heavy as that intended for sides which had previously been tested by us.

This stock board was distinctly laminated in construction, showing white outer surfaces and a darker center. When split apart the internal lamina revealed partially repulped old print paper."

A. That was a different source than Cherry River.

Q. And did you ever in any of your experiments and in your research work find any old print paper in Cherry River Paper Company stock?

A. No, sir.

The Master: Q. Did you ever investigate any Cherry River stock?

A. Yes, sir, I have split it down into lamina many times.

Mr. Gariepy: Q. Taking this report, Doctor, and the results of your tests in here, on page 5 you report bacterial findings on closures for paper milk bottles—jobbers stock. What do you mean by jobbers stock?

A. That was material that was jobbed to the Dixie-Vortex Company.

Q. Page 5?

A. Yes, sir.

Q. Dixie-Vortex Company?

A. Yes.

Q. What was that stock made out of, if you know, as to quality?

A. The quality was poor.

Mr. Schaefer: Off the record, just a minute.

(Discussion had off the record.)

481 Mr. Gariepy: Q. Does the same apply, Doctor, to your findings concerning odors, on pages 6 and 7? That was page 5, the one I just asked you about.

A. This is a continuation of that one. The whole table runs through all of those pages.

Q. And did any of that apply to the Cherry River Company stock?

A. No, sir, it did not.

Q. With regard to your statement on page 8, Doctor, concerning this stock and characterizing it or describing it, you made this statement:

"It is also quite obvious that the paper board from which these closures were 'drawn' carried general contamination throughout the entire web as indicated by the frequency of bacterial or mold growth from the cut edge of the flange, and the sharp bends forming the flanges. It is evident also that the paraffinizing, or waxing, quite successfully sealed the outer and inner surfaces of the closures where the fabric was not sharply bent or cut."

Do you still adhere to the same conclusions with regard to this stock that you used there?

A. Yes, sir.

Q. And none of this was virgin spruce pulp or 482 Cherry River Paper Company stock?

A. It was not Cherry River Paper Company stock.

Q. Now, with regard to the cultural tests on samples taken from board from which tops were formed, shown on page 9, with regard to bacterial growth and sterility and also on pages 10 and 11, Doctor, will you look at that and tell me whether any of those tests in regard to bacterial growth and sterility applied to Cherry River Paper Company stock?

A. I cannot answer that.

Q. You don't know what stock it was?

A. No, I do not.

Q. These show with regard to odor of plates and bacterial counts practically absolute sterility and absence of odor, do they not?

A. That is right. That is—

Q. What was your answer, Doctor?

A. That is right.

Mr. Schaefer: Did you finish your answer, Doctor?

The Witness: I meant to say that I do not know the absolute identity. The company did not reveal the absolute identity of that stock.

Mr. Gariepy: Q. With regard to the cultural tests shown on page 11, taken from board from which the samples are formed, the tests are for, first, bacterial growth and, second, for odor of plates, as shown by 483 page 11. Can you tell whether that refers to any Cherry River Paper Company stock?

A. That is Cherry River Company stock. I used that for the side walls.

Q. And does that show a condition practically of absolute sterility and absence of bacterial growth and absence of odor?

A. Yes, sir.

Q. Now, calling your attention, Doctor, to Table No. 7 on page 17, bacterial counts on nested paper milk bottles, were any of those paper milk bottles the Pure-Pak container?

A. They were not.

Q. Do you know whose container they were that you performed these tests and made these reports on?

A. They were made by the Dixie-Vortex Company.

Q. And is that container made out of the same quality of stock, if you know, that the Cherry River Paper Company stock is?

A. It is the Cherry River stock, the side walls. The top is that previous report.

Q. On pages 13 and 10 and 11?

A. That is right.

Q. With regard to page 17 and the tests that you made concerning bacterial colonies per bottle, would you say that the results of those tests show a condition of 484 acceptable sterility in the trade.

Mr. Schaefer: That is objected to.

Mr. Gariepy: He is here as an expert, Master, and he performed this test. He is qualified to testify whether it is sterile or not.

A. What is the question?

The Master: Read the question.

(Pending question read by reporter.)

Mr. Gariepy: Delete the word "trade" and include therein among public health authorities governing the control of milk in cities.

Mr. Schaefer: That is objected to, as well.

Mr. Gariepy: That is the test.

The Master: Read it again.

(Question read, viz:

"With regard to page 17 and the test that you made concerning bacterial colonies per bottle, would you say that the results of those tests was a condition of acceptable sterility?"

Mr. Gariepy: Q. Doctor, will you look at page 17 of your report with regard to the table number 7, concerning the bacterial counts on nested paper milk bottles, and tell me whether the result as shown in that table of tests performed by you show accepted sterility, or acceptable sterility, as considered and used in the matter of qualifications among public health authorities for cities and villages?

485 A. No.

Q. What is standard, if you know, that they have?

A. There is no standard for tests of this sort, so far as I know.

Q. Will you look at the summaries of table seven, Doctor, contained on page 19, and describe what you mean under the "F" series and the "P" series, with regard to the comparison of the glass bottle with the paper bottle?

A. This is not a comparison between the glass and the paper bottles. This is an attempt to show that these nested containers are filled with water and incubated for six hours, and covered with a fibre bottom or closure, that there is a difference in the bacterial count between those covered with fibre closures and those covered with sterile petri dish closures. It was nothing more than another way to show those closures were inferior stock.

Q. Do you know anything about whether paper bottles are ever nested in the trade as commonly used?

A. Certain types are.

Q. Those are the conical types that you referred to?

A. Yes—well, with one modification.

Q. What are there other than conical types, nested?

A. This is a conical type container which is nested in reverse, it fills through the bottom and the closures
486 are put on in the bottom and then it is put upright and put in service.

Q. Did you ever perform any such test with regard to the square Pure-Pak container?

A. There is no possibility of making a test like that.

Q. That is because it is not nested?

A. It is not a nested container at all.

Q. It has no closure?

A. The closure is a part of the container.

Q. On table number eight, Doctor, you have a table listing the results of your experiments on bacterial counts of milk in paper bottles and in glass bottles, and on the bottom you sum up the matter of averages. Will you look at that table as shown on page 21 and tell me whether that is a true representation of the result of your experiment?

A. It is.

Q. How does the average there with regard to the bacterial counts show up with regard to the glass and the paper containers?

A. There is a slight advantage for paper.

Q. What per cent?

A. It would work out on percentage basis.

Q. Was that on board from the Cherry River 487 Paper Company?

A. Yes, sir.

Q. This report is in 1938; when were these tests performed as shown in this report, Doctor?

A. They were done the preceding year.

Q. These samples here that you list on table eight were aged for twenty-four hours for what purpose?

A. To simulate commercial conditions; that is, milk is pasteurized and bottled and placed on sale the next day, usually.

Q. Referring to page 20, in making the tests with regard to comparing the paper bottle with the glass bottle, you made this statement:

"The glass bottles used in these tests were plant washed in a pressure type bottle washer."

Doctor, I show you document which I will ask to have marked "Plaintiff's Exhibit 42 for identification (handing document to the witness).

(The document referred to was thereupon marked by the Reporter "Plaintiff's Exhibit No. 42 for identification.")

Q. (Resumed.) Is that what you call, Doctor, a pressure type bottle washer, referring to Plaintiff's Exhibit 42 for identification, entitled "Model C—Soaker Bottle Washer"?

488 A. No. This is a soaker type bottle washer.

Q. How does that type of bottle washer differ from the pressure type?

A. In this type, the alkali wash is in contact with the

inside and outside for a period of time, and in the pressure type the rinses are injected into the nozzle, by a spray on the outside, by nozzles.

Q. Which do you consider the most effective and better, so far as sanitation and getting a better wash?

Mr. Schaefer: That is objected to as immaterial.

Mr. Gariepy: I think it is material.

The Master: What is the question?

(Question read by the Reporter.)

Mr. Gariepy: Which he says he considers superior.

The Master: Which two are you talking about?

Mr. Gariepy: The pressure type—

The Witness: This is the soaker type.

Mr. Gariepy: This is the soaker type?

The Master: I will let him answer.

A. That couldn't be answered yes or no.

Mr. Gariepy: Q. Do you have an opinion as to which is the better type of bottle washer, so far as sterility is concerned?

A. Properly serviced, I think the soaker type washer is the better.

489 Q. Following on with your statement, Doctor:

"They first received a cold rinse, then were washed in a hot solution (approximately 180 degrees F.) of 1.25 per cent trisodium phosphate and 0.6 per cent alkali, after which they received a hot rinse followed by sterilization with live steam."

Do you know whether that is a common customary way for washing bottles?

A. It is, for the pressure type washer.

Q. Do you know whether that is the adopted method or technique used in the City of Chicago for washing glass milk bottles?

A. I don't.

Q. You stated, further, Doctor:

"Bottles washed in this fashion are considered commercially sterile, but actually in bacteriological tests yield from a few hundred to several thousands of bacterial colonies per bottle."

Is that the result of your conclusions on these bottles, considered commercially sterile?

A. That is the result of the tests done at that plant on their washed bottles.

490 Q. How many hundreds or how many thousands

of bacterial colonies per bottle are considered acceptable, if you know, to health authorities?

Mr. Schaefer: That is objected to.

The Master: Objection sustained.

Mr. Garipey: Q. Doctor, after performing these tests and comparing the glass bottle to the paper, you made this statement:

"It will be noted that the grand average bacterial count of twenty-six samples of milk in paper containers is approximately four thousand less than the grand average bacterial count of a similar number of samples put up in commercially sterile glass bottles." Is that true?

A. That is true.

Q. Further, in this report, on page 28 you have a statement with regard to "The Chip-Board Carton." What do you mean by that?

A. It is a very inferior type of fibre board.

Q. What has that to do, or, what relation has it with the milk itself?

A. Well, that type of board is usually used to house containers, that is, packages.

491 Q. After the containers are filled with milk and ready to be taken from the dairy?

A. Well, that and also to act as packaging for parts of containers going into the dairy, such as bottle caps and so on.

Q. Well, to be more definite, that is the large brown carton in which the containers are placed after they are filled at the machine; is that right?

A. Well, that is one class.

Q. Did you ever hear of a chip-board carton being used for containing the milk, next to the surface, itself?

A. No, sir.

Q. Have you ever performed any tests, Doctor, with regard to the carton, or chip-board carton, as you put it, that is used by Fieldcrest Dairies in this lawsuit with regard to housing, as you put it, the filled bottle of milk in paper containers?

A. No, sir.

Q. On page 36 of your report of 1938, just referred to, you make this statement:

"These tests (referring to the tests concerning the bacterial findings on new closures from the jobber and from the home factory) indicated that the inner or milk
492 contact surfaces were 93.9 per cent sterile."

Do you remember that statement?

A. Yes, sir.

Q. Is that a true statement, as result of your tests?

A. Yes, sir.

Q. Further, with regard to closures from another stock paper, on page 36 it appears that you make this statement in your conclusion:

"It will be noted from this table that eight out of the forty samples tested were sterile throughout—a complete sterility of 20 per cent. But better still only one closure yielded any growth from the inner or milk-content surface—a milk surface sterility factor of 97.5 per cent."

Do you remember that statement on page 36 of your report?

A. Yes, sir.

Q. Is that a true statement?

A. Yes, sir.

Q. Of your conclusion with regard to those tests?

A. Yes, sir.

Q. With regard to half pint sized shells, Doctor, and tests that you made and experiments as related on 493 pages 36 and 37, you made this statement:

"The fibre closures used on the one series were those obtained from a jobber, the other were those which showed high sterility and were made in the home factory."

What is the significance of that statement?

A. It meant that the factory was attempting to control their difficulties, that is, the converter.

Q. Have you any evidence that there was any effort made, or are you just basing that on the difference in the result of the tests?

A. No, but they actually cooperated in preparing new material when I asked them to.

Q. But there wasn't any doctoring up, was there?

A. No. Material obtained from a different source.

Q. There was no build-up on the part of the factory?

A. No, sir.

Q. Further, with regard to these half pints in these tests that you performed, concerning bacterial counts on nested paper milk bottles as shown on table 14 on pages 38 and 39, is the result shown concerning bacterial colonies per bottle, a true report and your true finding?

A. Yes, sir.

494 Q. What does that show with regard to absolute sterility or commercial sterility as you use it?

A. This does not apply to glass bottles.

Q. No, it is with regard to paper; that heading shows that?

A. Yes. But, as I explained to you before, this contact test is not approved as a standard technique.

Q. It is not approved as a standard technique?

A. No, sir.

Q. How does it differ from the test which is considered a test of standard technique?

A. Standard technique which would be similar to it would be the broth culture test.

Q. Did you perform that?

A. Not on these containers.

Q. On page 42 of your report, Doctor, entitled "Comparative tests of Milk in Glass and in Paper Bottles on a Commercial Basis"; in describing the making of these tests you state:

"The milk was placed in the quart sized glass bottles by a special draining spout which was substituted of a paper container under the valve of the filler tank."

Why was that procedure followed?

A. It was the only way we could fill a quart glass
495 bottle on this type of filler. It was designed to fill paper containers only.

Q. And that required the stopping of the automatic bottle filling equipment?

A. Yes, sir.

Q. Which is not the usual thing done in the plant?

A. No, sir.

Q. Further, after describing the employed method above quoted on page 42, you state as follows:

"We were not satisfied with the degree of sterilization that was achieved in the glass bottles as was indicated by the bacterial count of the control bottle. The relatively high bacterial counts both in the raw milk and the finished product was caused by pin-point colonies."

What type of glass bottles was that, Doctor—those that were filled in the usual, customary method of filling glass bottles?

A. No.

Q. And sterilized in the regular way, or what method?

A. They were filled as indicated in the first quotation there.

Q. With this draining spout?

A. Yes, sir, they were cleansed by a 3 per cent 496 alkali wash and subsequently steamed.

Q. After that was done, wasn't this the result and the summary of your finding:

"It will be noted in the summarization that the bacterial counts obtained from milk in paper containers was lower in every way than corresponding counts made on milk in glass bottles."

A. That's right.

Q. On page 43?

A. Yes.

Q. This table number 18 shown on page 43 correctly portrayed your findings with regard to the bacterial colonies per cubic centimeter in glass bottles and in paper bottles?

A. That is a correct record.

Q. Per cubic centimeter, that is?

A. Yes, sir.

Q. On page 44, under table number 19, Doctor, you list a schedule of the result of your tests under the heading "Comparative bacterial counts of milk in Paper Bottles and in Sterile Glass Bottles—bacteria colonies per cubic centimeter; does that table correctly portray the result of your experiments in comparing both receptacles?

A. Yes, sir.

497 Q. The same with regard to your comparisons as shown on page 45?

A. Yes, sir.

Q. Page 46, summing up this test and comparing the paper bottles and the sterile glass bottles, you make this statement:

"It is obvious from the data presented that the coil vat is the part of the plant equipment which harbors these thermophilic bacteria, and that they are spreading into all the plant equipment. In spite of this handicap it will be noted that the milk put up in paper containers presents a ratio of average counts very closely comparable to the average bacterial counts of milk put up in laboratory sterilized glass bottles."

Does that represent your true judgment?

A. Yes, sir.

Q. These thermophilic bacteria are heat-loving bacteria, or those that are more heat-resisting?

A. Heat-loving.

Q. That is the greek and latin origin of the word?

A. Yes.

Q. They will resist the heat better than the ordinary bacteria?

A. They really develop in that temperature.

498 Q. And they will breed?

A. Yes, sir.

Q. Are they pathogenic bacteria, Doctor?

A. So far as we know—not.

Q. Now, have you ever been to the Cherry River Paper Company and made any investigation with regard to finding water in the stacks?

A. No, sir.

Q. Do you know from your experience and experiments and observation on the paper bottle as to whether there is at the present time a constant advancement with regard to the type of design, quality of paper and sanitary methods being employed?

A. Yes, sir.

Q. During the time that you have become acquainted with this subject and made a study of it, how much advancement would you say that you have found?

A. Very extensive.

Q. On the top of page 12 of your 1938 report you make this comment:

"It will be noted that in these series of tests involving 70 units taken from a total 514 sheets of stock board only four samples showed any growth of bacteria or molds. This would indicate a sterility factor of approximately 94 per cent by this method of testing."

499 Q. Is that your statement?

A. Yes, sir.

Q. Is that on Cherry River Paper Company stock or board?

A. I believe it is. It can be verified.

Q. Will you look at that, Doctor?

A. Yes, sir.

Q. What was the sterility factor, Doctor, in these tests on this paper board?

A. Do I hear your question right?

Q. I withdraw it. Were your results, with regard to these experiments that you performed, quantitative?

A. Yes, sir.

Q. Were the bacteria that you found in performing these tests of any sanitary significance?

A. Not in that case.

Q. Did you compare the paper container in this case with the glass bottles in parallel series?

A. Well, do you mean with reference to that particular test?

Q. Yes, Doctor.

A. It is impossible to make it.

Q. You didn't do it—the answer is?

A. No.

Q. It appears from these various tests and tables reporting the result of your experiments, that you found an average of fewer bacteria in the milk in the paper bottles than in the glass bottles; is that so?

500 A. Yes, sir.

Q. How do you account for this difference?

A. The chief difference is due to the improper sterilization of the glass container.

Q. Do you know that there is such a thing as a chlorinator used in sterilizing glass bottles?

A. Yes, sir.

Q. Do you know whether that part of the washing equipment is subject to being irregular and becoming out of order during the process of washing?

Mr. Schaefer: That is objected to.

The Master: I will let him answer.

A. Yes, it does.

The Master: Q. How do you reconcile that with your statement a little while ago that in your district up there you found some bottles that were absolutely sterile?

A. In that case your machinery is working in perfect fashion.

Mr. Gariepy: Q. Do you know how often the water used in the bottle washing machine is used, Doctor, under an ordinary run of washing bottles at a milk plant?

Mr. Schaefer: Objection.

The Master: Sustained.

Mr. Gariepy: Q. At districts where you per-
501 formed these tests—insert that in the question.

Mr. Schaefer: I object.

Mr. Gariepy: The Master just asked him a minute ago concerning these questions.

The Master: Yes, go ahead.

Q. In the district—in your district—that is the way you have described it before where you said that the

bottles were absolutely sterile. Answer the question with reference to that.

A. It is used many times. I don't know what—

Mr. Garipey: Q. Would you say it is seven days or eight days or two weeks at a time, before it is changed, or what?

A. I think it is changed daily.

The Master: Q. In your district, that is?

A. Yes, sir.

Mr. Garipey: If it is not changed daily, Doctor, what is the result with regard to the quality of the water used in the rinse?

Mr. Schaefer: That is objected to.

The Master: He may answer.

Mr. Schaefer: There has been no showing that the witness has ever conducted any tests that would indicate whether the condition of the water changes.

The Master: Q. Have you ever conducted any tests along that line?

502 A. Yes, sir.

Q. That is where the water is not changed daily?

A. Yes, sir.

The Master: All right, go ahead and answer it.

Mr. Garipey: Q. What did that show, Doctor, where you conducted those tests where water was not changed daily in the bottle washing machine?

A. The bacterial count goes up.

Q. In the event the water was not changed for a week or ten days at a time, what would you expect to find with regard to the height or the amount of bacteria count?

The Master: Q. What did you find? Did you make any investigations or tests?

A. I made investigations and tests but I couldn't quote definitely.

Mr. Garipey: Q. What is the best of your memory or your recollection on the subject now?

The Master: Q. Put it this way—the longer the water was unchanged, the more bacteria?

A. The higher the bacterial count, yes, sir.

Mr. Garipey: Q. Did you ever have occasion, Doctor, to find the water in the bottle washing equipment clogged or unable to run by reason of sludge forming from failing to change the water?

A. Yes, sir.

503 Q. When did you have that experience, Doctor?

A. In connection with the milk control program of our district.

Q. How long ago was that?

A. It comes up repeatedly.

Q. Describe the nature of that sludge you found in the machine?

A. It is somewhat gelatinous.

Q. About how much with regard to a pint or a bushel basket of that did you find?

A. I should say in a container in which the water was allowed to gravitate out or empty out by gravity, about one-fourth of the container would become gelatinous at the bottom.

Q. Would you call that a condition that makes for sterility in the washing of bottles or not?

A. The absence of it.

Q. And accounting for a high bacteria count?

A. Yes, sir.

Q. In your statement on page 20 you use the phrase with regard to colonies per cubic centimeter of several thousands. About how many would you mean by that?

A. I would have to know the reference, definitely.

Q. (Mr. Gariepy hands the 1937 report to the witness.)

A. Well, I have actually obtained counts as high
504 as 2,900,000 per container.

Q. That is with reference to this phrase on page 20, where you state that:

"Bottles washed in this fashion are considered commercially sterile, but actually in bacteriological tests yield from a few hundred to several thousands of bacterial colonies per bottle."

A. Yes, sir.

Q. Doctor, is there any such thing in your experience and in the research field with regard to a common definition and meaning of the words "commercially sterile"?

A. Yes, there is a definition.

Q. What is that definition?

A. The accepted standard is one organism per cubic centimeter of volume of the container.

Q. Do you know what the standard set as being acceptable by the United States Public Health Service is?

A. It is that standard.

Q. One thousand?

A. Yes.

Q. From your research, Doctor, and from these tests as outlined in your report for 1938, have you an opinion with regard to the comparative merits of the glass bottle for distribution of milk, with the paper bottle made of virgin spruce pulp?

505 Mr. Schaefer: That is objected to, if the Court please.

The Master: Objection sustained.

Mr. Rall: If the Court please, he was asked about one test from which it was disclosed.

The Master: He is asking the question.

Mr. Rall: But, we are here together on this and it seems to me vital that they shouldn't be permitted to make from one isolated test a comparison favorable to the glass milk bottle and then over all of this witness' long experience we be prohibited from asking what all of his tests show. It seems to me it throws a great deal of light on whether or not the test about which they asked him was a true, fair representative test of this witness' entire experience.

The Master: I sustain the objection.

Mr. Gariepy: Q. What is your opinion, Doctor, with regard to the paper container from a health and sanitary standpoint, compared with the glass bottle from a health and sanitary standpoint, for use in the sale of milk?

Mr. Schaefer: That is objected to.

The Master: Sustained.

Mr. Gariepy: Q. I believe, Doctor, that these tests described in your 1938 report concerning which I
506 have asked several questions, show that you made a careful and intensive study of bacteria in milk in glass and in paper bottles. Were these made under practical conditions?

A. Yes, sir.

Q. Were you satisfied with the degree of sterilization of glass bottles that you found in performing these tests?

A. No.

Q. Don't these tables and these tests that you performed show in about every case that you found an average of about half as many bacteria in the milk in the paper as you found in the milk in the glass bottles?

A. That is too high. It is 1 to 1.05 and 1 to 1.02.

Q. That is what your findings were?

A. I think I have that quoted correctly. I beg your pardon. One ratio was 1 to 1.08, and the other was 1 to 1.05.

The Master: You are now reading from what?

A. "Comparative bacterial counts of milk in paper bottles and in sterile glass bottles."

The Master: I say, what are you reading from?

A. The same report he has been talking about.

The Master: What page?

507 A. Page 46.

The Master: All right.

Mr. Gariepy: Q. Doctor, I also note that you use the phrase "Standard Milk Bottle", or "Standard Milk Container", referring to page 47 of your report under conclusions.

A. Yes.

Q. What do you mean by "Standard Milk Container"?

A. I was using the term there in an accepted sense, that is, that folks generally recognize a milk bottle; but, since that time, there have been some tests made that should alter the word "Standard".

Q. To such an extent—or to what extent?

A. Well, to the extent that there is no standard.

The Master: Q. Doesn't that depend on what you mean by "Standard"?

A. Yes. Meaning by a standard, a perfectly uniform object.

Q. Yes, I suppose if you call a standard, a bottle made of glass, that is round, and sort of tapers off towards the top, with an opening at the top, and a certain diameter at the bottom, that would be fairly standard, wouldn't it?

A. It is fairly standard—actually not, though.

Mr. Gariepy: Q. With regard to a bottle about six 508 and one-half inches high and four and one-half inches wide, with a gable top, would you consider that as standard, if you found it used in two hundred cities and villages throughout the United States?

Mr. Schaefer: I object.

Mr. Gariepy: Let me finish—

Q. Made out of paper, and paraffined on the inside and paraffined on the outside?

Mr. Schaefer: I object.

Mr. Gariepy: What is the reason for the objection?

The Master: Let's not argue, here.

Q. So far as paper containers are concerned, would you say that the type of container just mentioned by Mr. Gariepy is standard?

A. I would.

Mr. Gariepy: Q. Do you know the extent of the use of that container, Doctor, in the various cities in the United States?

A. Well, I have a general idea, but not specific.

Q. What do you know, of your own general information—

Mr. Schaefer: That is objected to.

Mr. Gariepy: Q. —concerning its use in various cities?

Mr. Schaefer: That is objected to on the grounds previously raised, and now going into that question with
509 this witness.

The Master: I will let him answer and say if these paper containers are used in some cities of the United States.

A. It is used in many of them.

Mr. Gariepy: Q. Name those that you know, Doctor?

A. It is used in New York City; Baltimore; Philadelphia, the suburbs of Chicago, in California—Los Angeles.

Q. Doctor, do you use the paper container in your own home?

Mr. Schaefer: That is objected to.

A. No.

The Master: Objection sustained.

Q. By the way, when you mentioned New York City and these other cities, do you mean to say that they use only paper containers in those places?

A. No. They are accepted equally with glass.

Q. Well, are they used as generally as glass?

A. Do you mean on the basis of the proportion of the volume?

Q. Yes?

A. I am not in position to answer that.

The Master: Go ahead.

Mr. Gariepy: Q. What have you found, Doctor, in
510 your experience and experiments and research field on the glass milk bottle and on the paper milk bottle, that you offer as support for your conclusions on page 46, that the paper containers are superior to the glass milk bottle?

A. Well, it is a single service container, is one of its points of superiority.

Q. That is one?

A. Yes, sir.

Q. What are the other factors?

A. The fact that the bacteria count is often housed up in it, so that the bacteria count are comparable or sometimes superior if the sterilization of the glass container is not adequate.

Q. The fact that it is a single service container, how does that affect the public health angle, Doctor?

A. It absolutely breaks the transmission of communicable diseases through the agency of a glass bottle.

Q. Have you in your experience and experiments found occasions where diseases have been communicated by reason of the use of glass bottles?

A. I have not detected any, myself.

Q. Do you know of occasions and places where there has been such?

A. Yes.

Mr. Schaefer: That is objected to.

511 The Master: What is the question?

Mr. Gariepy: Read the question.

(Last two questions read by Reporter.)

The Master: Objection sustained.

Mr. Gariepy: Q. In your testimony with regard to the control area that you stated, Doctor, you said that you found perfectly sterile bottles. What was the percentage of perfectly sterile to the total per day of the bottles, that is with regard to one per cent or ten per cent?

Mr. Schaefer: That is objected to.

The Master: Let him answer.

Mr. Schaefer: If the Master please, I would like to argue that—that is the condition of glass bottles in this district in Pennsylvania is utterly immaterial here. Now, we are going into per cent of sterility of that district.

The Master: We let the other in as to sterility of glass bottles in his district. Now, then, that statement, unexplained, might perhaps mean they are all sterile, and he wants to find out what is the situation in his district. Now, whether his district necessarily governs is a different thing.

Mr. Gariepy: Q. Did you get my question, Doctor?

A. I think I have it.

512 Q. What percentage did you find to have sterility in your district? You said you found sterile bottles.

A. The percentage of sterility in quarts was 44.4; in

pints 36.1. In those that are commercially sterile, of the quarts 22.2 per cent and of the pints 30.5 per cent, which we will indicate as being sterile; giving us 66.6 for each.

Q. What do you mean, Doctor, by commercially sterile as you use it?

A. That is an allowed bacteria count of one thousand for quarts and five hundred for pints.

Q. You know nothing about whether the soaker washer as described in exhibit 42 shown to you is used in the Chicago area or not, do you, in the washing of glass bottles?

A. I don't.

Q. Do you know the other types of glass milk bottle washers that are used?

A. In Chicago?

Q. Yes?

A. No, sir.

Q. Do you know anything about the counts with regard to bacteria counts required for the acceptibility of glass milk bottles in the Chicago area?

A. I don't.

Q. How long ago, Doctor, did you perform these 513 tests outlined in your report and article concerning which I have asked you several questions, labeled reprint from The Pennsylvania Association of Dairy Sanitarians, Fourteenth Annual Report, 1938? Are they recent studies?

A. That was done in 1937.

Q. All during that year?

A. Yes, sir.

Q. Did you perform other experiments at the Geneva laboratories with Dr. Sanborn and Dr. Breed?

A. Yes, sir.

Q. When were they performed?

A. Last summer, 1938.

Q. Was that on virgin spruce pulp paper board from the Cherry River Paper Company?

A. Some of it was.

Q. And have you the results of those experiments here?

A. Well, now, do you want the results of all experiments?

Q. That you performed on virgin spruce pulp paper board from the Cherry River Paper Company, in Geneva?

A. Disintegration tests, do you mean, and things of that sort?

Q. Yes.

A. The disintegration tests that I run reveal less
514 than one hundred bacteria per gram of board.

Q. What is that with regard to being acceptably
sterile or not?

Mr. Schaefer: That is objected to, if the Court please.

Mr. Gariepy: I think he is able to give his conclusions.

The Master: I sustain the objection.

Mr. Gariepy: Q. How does that compare with the public
health standard for glass bottles?

Mr. Schaefer: That is objected to.

The Master: Where?

Mr. Gariepy: Right there.

The Master: Where?

Mr. Gariepy: In Geneva where he performed them.

The Master: I will let him answer it.

A. There is no possible comparison.

Mr. Gariepy: Q. Why?

A. Because the organisms in the paper container are
obviously involved in the fabric, whereas the organisms in
a glass container are obviously on the inner surface.

Q. Did your test include the inner surface?

A. I have made no rinse tests.

Q. When you disintegrate the board, the inner surface,
as well as the outer surface, was disintegrated, was it
515 not?

A. Yes, sir.

Q. You know nothing about the chip-board stock that
is being used by Fieldcrest Dairies in this case for hous-
ing the milk containers?

A. I don't.

Q. The milk containers that they sell?

A. I don't.

Q. You have also some remarks concerning the melt
adhesive as you refer to it on page 12 of your report. Did
you perform certain experiments concerning bacteria count
in that melt adhesive?

A. Yes, sir.

Q. As used on the bottom of the milk bottle?

A. Yes, sir.

Q. Paper bottle?

A. Yes, sir.

Q. Showing you table five on page 13, regarding cul-
tural tests made on "Ribbons" of number 227 melt adhe-

sive, is that the result of your experiments on that melt adhesive?

A. Yes, sir.

Q. Do you know whether that is the same adhesive that is used in the Pure-Pak container?

A. I don't.

Q. Where was this adhesive obtained from, if you know?

516 A. Well, my source was from the Dixie Vortex Company. Where they got it I don't know.

Q. Is that the same adhesive that is used on drinking cups?

A. No, sir.

Q. What do they use that on, in every day life, so far as commodities on which this same adhesive is found, if you know?

Mr. Schaefer: That is objected to.

The Master: Let him answer.

A. It is used in construction of their Milk Dixie, which is their milk container, paper container.

Mr. Gariepy: Q. Is there any other place where it is used or any other type of paper receptacle that you know of?

A. So far as I know—not.

Q. Concluding, after the table on page 13, you make this statement on page 14:

"The evidence presented from these tests would seem to indicate that the melt adhesive compound is sterile as it is obtained from the factory."

Is that true?

A. It is true.

Mr. Gariepy: Mr. Rall has a few questions that he would like to ask the witness.

517

Examination by Mr. Rall.

Mr. Rall: The questions I ask are on behalf of Fieldcrest Dairies, and if this testimony is offered in the Ex-Cell-O case, I will make no objection in behalf of Ex-Cell-O Corporation in that case. I refer to all of the testimony of this witness.

Q. Have you ever found pathogenic bacteria on paper board manufactured at the Cherry River Paper Company?

A. No, sir.

Q. Did you ever find any pathogenic bacteria on paper board manufactured by any one that you have tested for use as milk containers?

A. No, sir.

Q. When you say that the bacteria which you did find on the six per cent of Cherry River board had no sanitary significance, what did you mean by that?

A. It couldn't be linked in any way with contamination that might be indicative of transmission of disease.

Q. What sort of bacteria were they that you found?

A. They were mostly spore forming aerobic organisms.

The Master: Q. What does that mean?

A. They are saprophytes, living—

Q. Living on what?

A. Living on organic material in general.

Q. Are they pathogenic?

A. No, sir.

518 Mr. Rall: Q. The test that you referred to in your answers to Mr. Schaefer's questions, you have described as older tests; is that true?

A. In that one case I did.

Q. When were those tests made?

A. 1933 and 1934, I believe it was.

Q. How many different kinds of paper containers did you use in that test?

A. Four different kinds.

Q. How many?

A. Four different kinds.

Q. In what way were the milk bottles that you used in that test sterilized?

A. By the chemical method described.

Q. How many additional tests have you made since the original test that you referred to in your answers to Mr. Schaefer's questions?

A. All that are involved in that subsequent report.

Q. Do you know whether or not the Pure-Pak Container manufactured out of Cherry River board are involved in your 1933 and 1934 tests?

A. It was not.

Q. What makes of containers were involved in those tests?

A. The Purity, the Seal Rite and the Seal Cone and the Mono Service.

519 Q. Which of those are fabricated at the factory and sent in pre-fabricated to the dairy for filling?

A. Purity and Seal Rite.

Q. The other two are sent in flat form and filled and also formed at the dairy?

A. The Seal Cone is fabricated from stock. The Mono Service is a nested container, as it is sent out from the converting plant.

Q. And differs from the Pure-Pak container which is sent in a flat form and is then formed and paraffined at the plant or at the mill before it is filled; is that true?

A. Yes, sir.

Q. Do the tests you have referred to in your answers to Mr. Schaefer's questions, made in 1933 and 1934, in your opinion as a bacteriologist, fairly reflect the mature opinion which you hold as to the relative merits of paper containers and glass containers from a bacteriological standpoint?

A. They do not.

Q. When you say that in general you are not satisfied with paper containers in the present state of development, will you tell the Master exactly what you mean by that statement?

A. I mean that they have not yet reached perfection.

520 Q. From your standpoint as a bacteriologist, do you believe that they are now in that state of freedom from bacteria that justifies their use for containing liquid milk and cream?

A. I do.

Q. You referred to the problem of coverage of paraffin in your answers to Mr. Schaefer's questions. As I understood you, you mean that if conditions under which the paraffin were applied were not uniform the paraffin would not be uniform; is that true?

A. Yes, sir.

Q. And the result of a lack of paraffining would be to permit moisture to be absorbed into the paper board that should have been covered; is that true?

A. Yes, sir.

Q. If the paper board is itself free from bacteria, there is no health problem presented in that absorption, is there?

A. No, sir.

Q. The tests that you made show an average of less than one bacteria per gram in 1938 in Cherry River board; is that true?

A. No. I said less than one hundred per gram.

Q. Less than one hundred per gram?

A. Yes, sir.

521 Q. Of the container board?

A. Yes, sir.

Q. Were any of those bacteria pathogenic?

A. They were not tested for it.

Q. They were not tested for it?

A. No, sir, that is, their gross appearance was not of pathogenic forms.

Q. Do you believe that there is any health hazard from the angle of application of paraffin that you referred to in your answer to Mr. Schaefer's question?

A. No, sir.

Mr. Rall: That is all.

The Master: Do you have very much more?

Mr. Schaefer: Yes, I would like to come back at 2:00 o'clock.

The Master: All right, 2:00 o'clock.

(Thereupon, the further hearing in the within cause was continued until 2:00 o'clock p. m. on the same day, June 26, 1939.)

522

• • (Caption—456) • •

Hearing resumed before Master Grossman at 2:00 o'clock, p. m. on June 26, 1939. The same counsel present.

JOHN W. RICE, resumed the witness stand and testified further as follows:

Examination by Mr. Schaefer.

The Master: Are you ready to go ahead?

Mr. Schaefer: Yes, sir.

The Master: All right.

Mr. Schaefer: Q. Doctor, you refer to two sets of studies of the bacterial content of milk in paper and in glass, one made in 1934 and the other in 1937?

A. Yes.

Q. Is that correct?

A. That's right.

Q. The study that you made in 1934 was a rather exhaustive study, was it not, and was so characterized by you?

523 A. That was the one that dealt with the four different types of containers.

Q. Yes?

A. Yes, sir.

Q. And other than those two series of parallel tests which you have described, have you made any other parallel tests to determine the bacterial content of milk in paper and glass?

A. Not on an extensive scale.

Q. Those are the two tests?

A. Those are the main studies, yes.

Q. Have you made any subsequent tests on the four types of containers involved in the 1934 test, to determine the relative bacterial content of milk in those containers and in glass?

A. No, sir.

Q. Then, so far as you are aware, and so far as those four containers are concerned, the result expressed in your paper published in 1934, to the effect that the grand totals and averages named would indicate that a properly washed and sterilized glass bottle is still the least hazardous in the contamination of milk through its container, is still correct?

A. So far as I stated is concerned.

Q. Your 1937 studies concerned only one type of
524 container?

A. Yes, sir.

Q. Is that correct?

A. That is right.

Q. And that was the Dixie Vortex Container?

A. That is right.

Q. Was that container being marketed at the time your studies commenced?

A. Not on a wholesale basis, that is it was a commercial set-up, experimental in character.

Q. Wasn't the container being used for the distribution of milk?

A. Yes, sir.

Q. At that time?

A. Yes, sir.

Q. It was?

A. One distribution center.

Q. What was that?

A. One distribution center.

Q. How did you come to make that test, Doctor?

A. I was asked by the company to check on their plant.

Q. Were you paid by the company?

A. Yes, sir.

Q. Now, I notice that in your analysis of the bacterial counts that you obtained from paper containers and from paper board, you made some effort to characterize the 525 odors of the bacterial colonies that you found?

A. Yes.

Q. Why did you do that?

A. It goes back to the original work on bottle cap contamination of milk, in which attempts were made to discover conditions of unfavorable fermentations in milk in a certain dairy, and all evidence that could be obtained was noted that might have a bearing upon the problem.

Q. Did you attempt to analyze these odors because of the possible future association with off-odors and off-tastes in milk put up in finished paper containers?

A. No, not at that time, because I never was confronted with the problem at that time.

Q. In your 1938 report there you made this statement: "Because of the possible future association with off-tastes and off-odors on milk put in the finished paper containers, an attempt was made to interpret the odor of the culture plates even though the descriptive terminology became somewhat picturesque at times."

A. That was the continuation of the work, that is, 526 the first association was with bottle caps and, of course, the second association was with reference to paper in connection with containers.

Q. Yes, and you were interested in those odors because of the possible future association with off-tastes and off-odors?

A. Yes.

Q. Is that correct?

A. Yes, sir.

Q. As you stated here?

A. Yes, sir. I don't think I understood the question the first time.

Q. Well, I might not have been as clear as I could have been with the question.

A. (no response)

Q. The result of your work with respect to comparative bacterial counts of milk in paper and in glass in 1934 show

that with respect to paper containers made from bleached paper there was an average count of 1.524, as contrasted with a count of 1 for glass; is that correct, Doctor?

A. Your reference is what page.

Q. Ten.

A. You are on the summarization?

Mr. Gariepy: What page is that, Mr. Schaefer?

527 Mr. Schaefer: That is page ten.

A. Yes, sir.

Q. And with respect to bottles made from unbleached stock paper, the paper container showed a bacterial count of 1.244, as contrasted with a count of 1 for milk in glass containers?

A. Yes, sir.

Q. Now, your work in 1937, reported in 1938, with the Dixie Vortex Container was divided really into two phases, was it not; the first phase being the work done with that container when a closure made of jobber's stock was used; and, second phase being when a closure made of the same material that was used in making the sides of the container was used?

A. That is not quite the situation.

Q. What is it, Doctor?

A. The first part of the statement is all right. The second part is from a different type of paper than is used in the first jobber's stock; but it was not Cherry River board that went into their closures.

Q. You made some finding with respect to closures used for those paper bottles when jobber's stock closures were used, did you not?

A. Yes, sir.

Q. Is that correct?

A. Yes, sir.

528 Q. And those tests showed certain results with respect to the odor of the culture plates?

A. Yes, sir.

Q. Is that correct?

A. Yes, sir.

Q. From what source would those odors have come?

A. They are associated with bacterial growth of one sort or another.

Q. They were the bacterial growth that you found in examining the closures?

A. Yes, sir.

Q. You found odors which you described as "stale,"

"fishy," "faint fishy," "faint acetamide fishy," "faint fishy," "pungent paraffine," "fecal," "fishy," "fishy," "wet dog" odor, "faint musty," "stale," "faint musty," "fishy," "stale," and "musty," "putrid-fecal," "musty" and "fishy," did you not, Doctor?

A. Yes, sir.

The Master: I am just wondering how that would sound, read back. Read it.

(Question and answer read by Reporter.)

Mr. Schaefer: Q. Did you find those odors, Doctor?

A. I did.

Q. You found those?

A. Yes, sir.

529 Q. You made that examination because you were concerned as to whether or not the odors associated with the bacteria in the paper container might be transmitted to the milk?

Mr. Gariepy: I object to Mr. Schaefer stating in the form of his question his conclusion rather than asking the Doctor why he did it.

"You made that statement. Why did you do it?" would be a better form of question.

The Master: The Doctor, with that notice, can correct the statement if he wants to.

Mr. Schaefer: Q. Can you answer that?

A. Well, of course, so far as the investigation is concerned, it was to find anything that might be considered to be detrimental to the product put up in paper.

The Master: Repeat that.

A. So far as the investigation is concerned, it was to find anything that might be considered to be detrimental to the product put up in paper.

Mr. Schaefer: Q. Now, in the published report of your work, Doctor, during 1937 on the Dixie Vortex Container, you reported in table number six in the bacterial counts 530 on paper milk bottles which were filled with sterile water and incubated for six hours at 37 degrees Centigrade, did you not, Doctor?

A. Yes, sir.

Q. How many samples did you use in that test?

A. Twenty-three.

Q. How many did you find sterile by that test?

A. Two.

Q. How many did you find with a count of less than one thousand colonies per bottle?

A. One.

Q. How many with a count of one thousand per bottle?

A. Five.

Q. The other thirteen all had counts above one thousand per bottle?

A. Yes.

Q. Ranging up to, one, as high as twenty-six thousand colonies?

A. Yes, sir.

Q. Some of those colonies emitted odors?

A. Yes, sir.

Q. Will you describe the odors that were emitted, please?

A. One is described as "stale"; one as "faint putrid"; another as "putrid"; another as "putrid"; one as
531 "fishy"; one as "foul"; one as "stale musty" and one as "foul."

Q. Now, where did these bacteria come from that you found in those paper containers, Doctor?

A. Obviously, from the container itself.

Q. That is because they were filled with sterile water?

A. Yes, sir.

Q. Because they were filled with sterile water, which couldn't have added any bacteria?

A. Yes, sir.

Q. How do you account for the large variation running from sterility to twenty-six thousand colonies per bottle?

A. First and foremost, this, as I brought out this morning is not a standard test at all; it is a very rigorous test to prove the presence of any bacteria in a container that may be dislodged or detached from and partial paraffining or anything of that sort, and the great range—for the want of a more detailed study,—would probably be due to the relative rate at which bacteria reproduce themselves in a nutrient or some nutrient medium, some reproduce very rapidly and others very slowly, and those that we would get that would go through two or three cultural generations would have a much higher count than those that would only go through one. As I explained this morning,
532 that is not a standard test at all.

Q. It is, however, Doctor, a test which reveals the bacteria which are present in the container which may be transmitted to the fluid which is put into the container?

A. Yes, sir.

Q. Is that right?

A. Yes, sir.

Q. And it is so designated to reveal that?

A. Yes, sir, definitely so.

Q. And the results did reveal it?

A. Yes, sir.

Q. If, instead of sterile water, you had in those containers milk, would the count be higher or lower?

A. Do you mean in comparison with what are listed?

Q. In comparison with what the counts are that are listed here?

A. Presumably higher.

Q. Bacteria normally multiply, don't they, Doctor?

A. In nutrient condition, yes.

Q. And milk is a nutrient material for the growth of bacteria?

A. Yes, sir.

Q. I call your attention, Doctor, to the container number W-181 of the three containers with respect to which you 533 testified, that showed an average of twenty-six colonies per plate and a count of twenty-six thousand colonies per bottle and those colonies you describe as large spreading granular colonies of bacteria and six mold colonies emitting a "stale" musty odor.

A. Yes.

Q. How do you know there were no pathogens present?

A. For one reason, the medium upon which these samples are plated was not designed to grow pathogenic bacteria, with the exception of study for cocci; none of those were present.

Q. You don't know whether or not there were pathogens present there or not?

A. On the basis of the nutrient quality of the medium, they were eliminated.

Q. Had you used a medium which would have been suitable for pathogens you might have found them?

A. Well, that would only be a conjecture, that is the only way I can approach it.

Q. The medium that you used was not designed to reveal the presence of pathogens?

A. No. That's right.

Q. Have you done any work with respect to the determination of the presence of pathogens?

534 A. None direct, no.

Q. In all of your paper container work?

A. None.

Q. You have done no such work?

A. None of it. By the way, there is an error at the top of that table six on page fifteen. It states the capacity of a bottle is 990 ounces. It should be the capacity of a bottle is 990 c.c. Not ounces. I just noticed that, so I call your attention to it.

Q. Now, with respect to the bottle designated as W-41, which had average bacterial colonies per plate of 10, and a total of 9,900 bacterial colonies per bottle, which you characterize as one mold colony and large granular spreading colonies of bacteria emitting a "stale" odor.

A. Yes.

Q. How do you account for the large number of colonies present in that container?

A. On the same basis as any other large count, as I explained awhile ago, the relative rate at which these bacteria would reproduce in this medium—water held for six hours at that temperature.

Q. Which, as I think you stated, is not a nutrient medium?

535 A. Well, there is enough impurity in the ordinary sterilized water to constitute a culture medium for bacteria. In other words, it was not distilled water.

Q. But, on the other hand, it was not as nutrient a medium as milk, for example, would be?

A. No.

Q. In table number seven which is reported by you as part of the report of your work done in 1937, with respect to the Dixie Vortex Container, you reported in the summarization to table seven and the relative bacterial counts of the first bottles in the nest, the last bottles in the nest and intermediate bottles, and your report showed that the average number of bottles found sterile of all bottles was 37.5; the percentage of first bottles found sterile was 16.6; the percentage of last bottles found sterile was 50 per cent and the percentage of intermediate bottles found sterile was 39.3 per cent.

A. Yes.

Q. How do you account for the difference in the percentage of sterility between the first bottles which had a very relatively low percentage of sterility, and the average and the intermediate and last bottles?

536 A. I made no attempt to account for that.

Q. Have you any opinion?

A. So far as I know I have made no comment on it.

Q. Have you any opinion as to what might account for that condition?

A. The only explanation that might be given is that we find in the rinse tests that the counts are not uniform; sometimes they are high; sometimes they are low; no attributable reason for it.

Q. Does there seem to be relation here between the first bottle—between the position of the bottle and the sterility of the bottle?

A. The first bottle should not have a sterility any higher than the intermediate. The fact of the matter is the intermediates are the most protected in the stack so far as stacking or nesting is concerned.

Q. But the first bottle has a lower percent of sterility?

A. Yes, sir.

Q. And you are completely unable to account for that?

A. I made no comment, which meant, of course, I had not comment to make. It is just one of those things—one of those things you can not explain at the time. May I make a comment there?

537 **Q.** Surely.

A. That is, examining this series, you are confining yourself to the "F" series there.

Q. Yes, sir.

A. In which the closure to the container was temporarily a fiber closure. The "P" series would eliminate anything that might come from the closure itself, it would be a sterile petrie dish, and there you see you have again a comparable result, although it is somewhat higher.

Q. That is again even where the sterile petrie dish was used as a closure, the first bottle was found to be less sterile than the other bottles?

A. Yes.

Q. Now, I call your attention to table number 18.

A. Yes.

Q. Reported in your 1938 report.

A. 18?

Q. Yes, which is a table of comparative bacterial counts of milk in paper bottles and in commercially prepared glass bottles.

A. Yes.

Q. I notice that you show that your quart bottle control had a bacterial count of 6500 per bottle.

A. Yes.

538 Q. What do you mean by your quart bottle control, Doctor?

A. It was a bottle that had been prepared for the reception of milk in the same way as all of the others that had been used in the parallel sampling.

Q. That is, a test was made of that control bottle in order to determine the bacterial count of the bottles which you were using in the parallel test?

A. Yes. Or, to put it another way—it was to determine how near sterility we had in our commercially prepared glass bottles.

Q. And these tests which are described in table number eighteen and concerning which you testified this morning, were tests in which the glass bottles had a bacterial content of 6500 colonies per bottle; is that correct?

A. No. I would say the control bottle had that, but there is no way of knowing what the others had, or were. Presumably they were not sterile.

Q. Presumably they had approximately the same count?

A. That all depends upon their previous treatment and the degree with which they were prepared for this test—that is the degree of cleanliness and sterilization.

Q. You know the degree of cleanliness and sterilization, do you not?

Mr. Garipey: I object to the statement of fact, Master, rather than an interrogation of the witness. Let the witness do the testifying.

The Master: The witness is able to take care of himself.

Mr. Schaefer: Will you read the question?

(Pending question read by Reporter.)

A. I will say in that connection that all of the bottles received the same treatment so far as cleansing and sterilization are concerned.

Q. As did the control bottle?

A. As did the control bottle.

Q. In your district do you permit the use of glass bottles with a bacterial count of 6500 per bottle?

A. Yes. Not if we know it, but there is no way of checking in our control area; there is no way of checking frequently enough to know whether the counts are held below that or above it.

Q. I see. Of course, your comparative results would be effected by the bacterial content of the glass bottles, would they not?

A. Yes, sir.

Q. So that if you used a glass bottle with a considerably lower content, your bacterial colonies which you found 540 in the milk would be considerably lower?

A. Yes, sir.

Q. And your ratio of average counts stated in the summary at the bottom of table eighteen, as 1.42 for glass as to 1 for paper depended also on the condition of the glass bottles used in the test?

A. That's right.

Q. Now, you made this statement in 1938, Doctor:

"There is no doubt that if the paper manufacturer, the paper bottle manufacturer and the control laboratory work critically and harmoniously work together, there will eventually be evolved in the not too distant future a paper milk container of whatever type or design that will be able to stand the most vigorous inspections of municipal and state public health officials, and which will win a place for itself as a standard of high inherent sanitary quality and the sound public health principle involved in the single-service container."

Has that goal yet been attained, Doctor?

A. No, sir.

Q. What work are you doing at Geneva now, Doctor?

A. Largely penetration tests.

541 Q. What do you mean by that?

A. The amount of moisture or dye, aqueous dye that is taken up by paper containers.

Q. That is, those tests are designed to determine whether containers are absorbent or not absorbent?

A. Yes, sir.

Q. Are they absorbent or not absorbent?

A. They are relatively absorbent.

Q. In relation to what?

A. In relation to glass.

Q. With the exception of the cap, the glass milk bottle is not absorbent, is it?

A. It is not.

Mr. Schaefer: That is all.

Mr. Gariepy: I have a few questions, Master.

Examination by Mr. Gariepy.

Q. Dr. Rice, you answered Mr. Schaefer's question with a quotation from the last ten lines of your article, a writing of 1938, with respect to the fact that you did not think that the paper bottle had attained a place to be accepted as a standard milk bottle. You also made this statement on page 46, just previous to that:

542 "When considered from the public health angle, these paper milk containers are superior to the glass milk bottle, since there is no chance to spread infectious disease organisms from household to household by a single service container."

Is that still your opinion?

A. Yes, sir.

Q. Is there a chance to spread disease organisms from household to household by the use of the glass bottle?

A. Yes, sir.

Q. With regard to table number seven, concerning which you were interrogated a few minutes ago, and the paper bottle as a receptacle for milk, on page 19 of your report you state as follows:

"In spite of the rather poor showing of these paper containers in the preceding sterility test it seemed reasonable to place them in test in parallel with the ordinary glass milk bottle. In these tests both types of containers would be filled with milk under commercial conditions and studies as to effect upon bacterial counts when handled under 543 conditions similar to those obtaining in the milk trade."

Is that still your conclusion?

A. Yes, sir.

Mr. Schaefer: Q. Was that a conclusion at all, Doctor?

A. Well, it was an assumption.

Mr. Gariepy: Q. Is that still your opinion, Doctor?

A. I would attack the problem in the same way, again.

Q. With regard to the paper board, you answered the question that any bacteria that was shown up in test on number seven or test number eighteen would be shown and, in your opinion, come from the paper container. Is that with regard to your conclusion on page 36, quoting:

"These tests indicated that the inner or milk contact surfaces were 93.9 per cent sterile."

A. I think that is dealing with another set of tests.

Q. That is on page 36, after you have outlined these tests on table 12, regarding original closures shaped at the home factory, the bacterial growth—all these various odors that you testified about, with regard to being putrid and fishy and so on; when you get through with that you 544 come down there and say these words I just gave you, page 36.

Mr. Schaefer: Following what table?

Mr. Gariépy: Table 13 is the last table.

Mr. Schaefer: Give me the table.

Mr. Gariépy: Table 13.

Mr. Schaefer: All right.

Mr. Gariépy: Q. After table 13, Doctor, there is one paragraph, and you state:

"These tests indicated that the inner or milk contact of surfaces were 93.9 per cent sterile."

A. That is this new set of closures drawn at the home factory, which was our attempt to eliminate the difficulties that we were encountering in the first set of determinations that were made in which we had these unfavorable conditions.

Q. These show 93.9 per cent sterility?

A. In the second test.

Q. In the second group of tests you got?

A. In other words, the plant eliminated the material from which the first tests were done, and with new stock used for the second set of tests, after these tests were devised.

Q. You just answered the question, that you were 545 performing more penetration tests and tests as to whether the paper was absorbent or not absorbent, and you said relatively in relation to the glass bottle they were absorbent. Is there any health hazard involved there?

A. No.

Q. You have on table number 8 on page 21 a list of your findings with regard to averages of bacterial colonies per cubic centimeter in the milk bottle in glass and in paper; you found that the average in the paper bottles was 70.6, and in the glass bottle, 74.6?

A. Yes, sir.

Q. And that is this Dixie Vortex Bottle?

A. Yes, sir.

Q. Is that virgin spruce pulp?

A. Yes, sir.

Q. Do you know whether it comes from the Cherry River Mill or not?

A. The side stock does, yes.

Q. The side stock does?

A. Yes, sir.

Q. Doctor, might not a bacteria form an odor in a culture or media such as was used in your tests and not form it in the milk?

546 A. Yes.

Q. Is an odor formation on the culture media an inclination that the same odor would be formed in the milk?

A. No.

Q. Were these odors determined in the milk?

A. No.

Q. Is it your opinion that the odors that are determined, as you determined them, would always be of any significance, whatsoever?

A. Yes, they do have significance.

Q. What significance?

A. For example, the odor of the colon baccillus is quite distinctive, and when that is found in connection with standard plate counts of milk, it is the next test to go on and identify the presence of the colon baccillus by distinctive tests.

Q. Did you do that?

A. We do that in our routine work.

Q. Did you ever do that?

A. Yes, sir.

Q. What did you find in doing that?

A. We found the colon baccillus present.

Q. When was that?

A. That was during the routine work of the milk
547 control program in our milk control area.

Q. What year was that, Doctor?

A. That has been running on since 1912.

Q. I see.

A. And it is in progress now.

Q. You stated that you made a test and that the test that you made was exhaustive concerning four types of containers.

A. Yes.

Q. Can you name those four types?

A. They are the Purity, the Seal Rite, the Seal Cone and the Mono Service.

Q. And since 1934 you have not made any tests on these four types with regard to comparison with the glass?

A. Not these kind of tests, no.

Q. What distribution center was this Dixie Vortex Container being used in at the time that you made these tests?

A. From Hazelton, Pennsylvania.

Q. With regard to the tests shown on table number 2, cultural tests on samples taken from board from which tops are formed—pages 9, 10 and 11, I notice in those three tables on those three tests, under "Odor of plates," you have zero throughout.

548 A. Yes.

Q. Is that right?

A. That's right.

Q. And with regard to bacterial growth, substantially, you have sterility throughout?

A. That's right.

Q. And you conclude, after making that test, with regard to odor and bacterial growth, as follows:

"It will be noted that in these series of tests involving 70 units taken from a total 514 sheets of stock board only four samples showed any growth of bacteria or molds. This would indicate a sterility factor of approximately 94 per cent by this method of testing."

A. Right.

Q. Is that an acceptable condition of sterility?

A. I would say so.

Q. Whose board was that, Doctor?

A. This is—I can't say. That is one of the boards I could not identify this morning for you.

Q. Do you know whether or not it is the Cherry River Paper Company board?

A. I don't know.

Q. Is it Dixie Vortex Container?

549 A. It was Dixie Vortex Container.

Q. With regard to table 18, Doctor, entitled "Comparative bacterial counts of milk in paper bottles and in commercially prepared glass bottles," do you consider that a fair test with regard to the bacterial counts in each container under normal use in the trade?

A. Yes.

Q. In that you found that the ratio counts in the glass bottle was 1.42, in the paper 1, only, on your summarization?

A. Yes, but I am wondering whether your first question applies.

Q. Well, this is the heading that you have there, "Comparative bacterial counts of milk in paper bottles and in commercially prepared glass bottles." That is your heading?

A. Yes, but I understood you to imply that the paper bottles were under equally commercial conditions.

Q. You conclude at the end of table number 18, as follows:

"It will be noted in the summarization that the bacterial counts obtained from milk in paper containers was lower in every way than corresponding counts made on milk in glass bottles."

550 Q. That is your conclusion and that is your opinion from your tests outlined in those tables, is it?

A. That is right.

Q. With regard to the technique employed on page 42, is it not a fact that this milk was placed in quart sized glass bottles by special draining spout which was substituted of a paper container under the valve of the filler tank.

A. Yes.

Q. Would that not increase the chance of sterility with regard to the glass bottle by filling it like that?

A. I don't believe it would.

Q. Do you think it would have the same effect when you fill it like this, as if it were filled in the machine, going in the rotating process?

A. No, it would not.

Q. Would it be higher or lower?

A. I am afraid it would be higher. That is the reason we studied another method in the second set-up.

Q. Is that a fair test, by means of substituting this new method or special draining spout?

A. It was the only test we could devise at the time.

551 Q. Have you ever seen the machine in operation which fills the Pure-Pak Containers?

A. I have not.

Q. Have you ever seen the machine in operation which fills the ordinary glass milk bottle with milk?

A. Yes.

Q. Is it or not a fact that a man stands near that

machine while the bottles are rotating on a sort of cylinder and the milk is poured in as the bottle meets its opening?

A. Yes, sir.

Q. And have you ever had occasion to make a test of the contents of a bottle of milk filled under those conditions, taken immediately from the filler?

A. Yes.

Q. With an attendant standing by?

A. Yes, sir.

Q. With regard to table number 19 in your 1938 report, entitled "Comparative bacterial counts of milk in paper bottles and in sterile glass bottles," you comment as follows:

"In spite of this handicap it will be noted that the milk put up in paper containers presents a ratio of average counts very closely comparable to the average bacterial counts of milk put up in laboratory sterilized glass bottles."

A. Yes.

Q. What laboratory methods concerning those sterilized glass bottles were employed?

A. They were capped with heavy craft paper and sterilized by steam pressure, 15 pounds of steam, for 15 minutes.

Q. Not taken from the dairy in the regular course of events in the filling of milk?

A. No. They were prepared in my laboratory.

Q. You make some comment, Doctor, concerning the sealing effect of paraffin, I notice in your report, especially with regard to edges of the paper board. Have you performed any additional experiments with regard to the effect of paraffin on this board, other than that you have described here?

A. That comment was made in connection with the board used in manufacturing of bottle caps, as I recall it. It may have been a reference in one of these later reports, but up to this time it was done.

Q. This is under table one of bacterial findings for closures for paper milk bottles—jobbers stock, and reads as follows:

553 "It is evident also that the paraffining, or waxing quite successfully sealed the outer and inner surfaces of the closures where the fabric was not sharply bent or cut."

A. Yes.

Q. What do you mean by "quite successfully sealed the outer and inner surfaces"?

A. As I just mentioned, this dates back to the work on bottle caps in which it was found that the waxing had the tendency to prohibit the development of bacteria from the surfaces which were waxed and were not subsequently modified by some other pressure such as scoring or penetration of wire and things of that sort. This is a statement that is drawn from that experience.

Q. What did you find with regard to bacteria in these caps that are commonly used by the glass bottle?

A. Well, the milk surface is the surface which gives you the least development of bacteria; the cut edges the most.

Q. Is that sealed with wax or paraffin or what?

A. It is wax or paraffin.

Q. Do you know anything about the quality of paraffin?

A. It is run through a paraffin bath on an endless
554 belt at a temperature of about 170 degrees.

Q. Is there any reason why, if the paper board is run through a paraffin bath at 170 degrees, it would not have the same effect with regard to sealing?

A. Presumably it has the same effect.

Q. The edges of these caps are sealed where the bacteria, if any, will come to?

A. Yes, sir.

Q. What did you find concerning edges which the paraffin did not seal in?

A. Wherever contamination emerges from the base of the cap, it is practically throughout the entire circumference.

Q. That would increase the bacteria count in the milk, or the content?

A. Yes, sir.

Q. What did you find with regard to permitting milk to be emitted through the edges of the cap in the bottle?

A. Do I understand that question?

Q. Yes, the edges of the cap, around, that touches the glass, did you find in your experiments as to whether or not that unsealed portion of the edges permitted milk
555 to be emitted and go through?

A. Yes.

Q. How much milk did you find that was permitted to

go through by reason of imperfect paraffining of the edges of the cap of the bottle?

A. I don't know—I am afraid that is not the situation. The cap edge of the cap fits against the cap flange or the side of the cap flange of your bottle.

Q. That is the glass part?

A. That is the glass bottle.

Q. That is right.

A. And as the column of milk expands it shoves up around that, especially when it increases in temperature or anything of that sort.

Q. Is it not possible for the expansion in cold weather, so that the top is completely lifted off and sitting up on the cream line?

A. Very much so.

Q. And the entire cream line is exposed to whatever bacteria may be in the air and come in contact with it?

A. At least some of it.

Q. That is a common occurrence in cold weather, in the winter time, when bottles are left outdoors, when they are in touch with the weather?

556 A. Yes, sir.

The Master: Is that all?

Mr. Garipey: That is all.

The Master: Are there any questions?

Mr. Rall: Yes.

Examination by Mr. Rall.

Q. These tests at 37 degrees Centigrade are substantially body temperature, 98 degrees Fahrenheit, aren't they?

A. That is right.

Q. Milk commercially is preserved at much lower temperatures than that, isn't it?

A. Yes, sir.

Q. The effect of those lower temperatures is to prevent the multiplication of bacteria at any such rate as takes place in a 98 degree Fahrenheit temperature?

A. That is right.

Q. The tests you made in 1937 and 1938 on closures from jobber stock were not made on board from the Cherry River Paper Company, were they?

A. They were not.

Q. And were not made on Pure-Pak Containers or the board used in Pure-Pak Containers?

557 A. No.

Q. The tests on the Dixie Vortex Containers which Mr. Schaefer referred to, in which two were sterile, one was less than one thousand, five had one thousand, and running as high as twenty-six thousand colonies, were not Pure-Pak Containers, were they?

A. No.

Q. Wherever in your testimony you referred to containers being contained in nests, they were not Pure-Pak Containers, were they?

A. No.

Q. Wherever you referred to closures in your testimony, the containers you were referring to were not Pure-Pak Containers, were they?

A. No.

Mr. Rall: That is all.

Mr. Gariepy: Q. Doctor, have you done any work on the amount of absorption in paper cups?

A. No, I haven't.

Mr. Gariepy: That is all.

558

Examination by Mr. Schaefer.

Q. The paper in the ordinary paper milk bottle cap is how thick, if you know, Doctor?

A. How thick?

Q. Yes. Is it less than thirty pound?

A. It is not less than thirty pound. I think it is about thirty pound.

Q. How thick is the paper in the container board?

A. That varies. In the Pure-Pak Container, it is twenty pound.

Q. That is the paper used in the bottle caps is thicker?

A. Yes, sir.

Q. It takes a longer time to dry thicker paper in the paper manufacturing process, does it not?

A. Yes.

Q. That is the paper remains exposed to the heat of the dryers, thicker paper remains exposed to the heat of the dryers a longer time than thinner paper?

A. That is what made me hesitate, because, where I have experience in paper mills, it is limited. The paper

of different gauge was run over the same number of drying rolls, at the same rate.

Q. At the same speed?

A. Yes.

559 Mr. Gariepy: The witness is shaking his head, meaning "Yes".

The Witness: How?

Mr. Schaefer: Q. The answer is "Yes"?

A. Yes.

Q. Where was that, Doctor?

A. That was at Oswego Falls Corporation.

Q. They were making both?

A. Yes, both cap board and container board, because they are converter for both.

Q. From the same source of raw material?

A. Yes, sir.

Q. And with the same machinery?

A. Yes, sir.

Q. And that was where you found the E-coli in the water at the calendar stacks?

A. That was the first run there.

Q. You have found odors connected with bacteria in milk bottle caps in milk, haven't you?

A. That is, you mean the odors in the milk after the cap is removed?

Q. Yes, sir.

A. I have never run a series of tests of that sort.

Q. You have never run a test to determine whether those odors are transmitted or not?

560 A. Whether the milk odors are transmitted?

Q. Whether the odors from the cap are transmitted to the milk?

A. No, sir.

Q. Nor have you run such tests with respect to container boards?

A. No, sir.

Q. As to their possible transmission to milk?

A. Not on milk itself. All of these samples were made or run with agar medium, that is the board was plunged right in the agar.

Q. With respect to table number 18, you testified that was a fair test. As to the relative bacterial content of milk in paper containers, under normal conditions—under normal conditions in the trade. In your experience, is a

milk bottle with a bacterial count of 6500 a normal condition in the trade?

A. I would say yes, a normal colony.

Q. That is also the normal condition of the trade in your locality that you permit raw milk to be sold for human consumption when that milk has a bacterial count of 1,660,000?

A. No, sir.

Q. That is the milk that you used in this test.

561 A. This was a plant set-up outside of our jurisdiction, it was at Hazelton, Pennsylvania, and our control area does not involve Hazelton.

Q. In your control area you do permit the sale of milk in bottles having a count of 6500?

A. I explained, it was very difficult for us to control the bottle count situation, and that is a significant thing, and you will find it in all small communities. The fact of the matter is, I think our community is exceptional in that it actually investigates it all.

Q. You mean in small communities that is not investigated?

A. I know that to be the case.

The Master: Q. What is that, that is not investigated?

A. The bacterial content of the cleansed milk bottle.

Q. Glass bottle?

A. Glass bottle.

Mr. Schaefer: Q. Table 18, Doctor, your samples twelve, thirteen, fourteen, fifteen and sixteen were apparently all taken at the same time, to-wit: 11:35 a. m., and yet they show differences in bacterial count ranging from twenty-three thousand to forty-three thousand, five hundred.

562 A. Yes.

Q. How do you account for that?

A. There is no way of accounting for it any more than there is a way of accounting for irregularity in bacterial rinse tests on paper container—either paper or glass.

Q. Would you permit milk to be sold in your district which had a count of forty-three thousand, five hundred?

A. Yes. Our ordinance calls for fifty thousand. There is a maximum.

Q. You testified, if I understood you correctly, that your method of filling glass bottles—the test reported as described in table number 18, reacted unfavorably to glass?

A. Yes, sir.

Mr. Schaefer: That is all.

Mr. Gariepy: I have just a few questions.

Examination by Mr. Gariepy.

Q. Doctor, you further stated in your report under table 18 that you were not satisfied with the degree of sterilization achieved in the glass bottle, as indicated by the bacterial count of the control bottle, and that 563 amounted to about 6500?

A. Yes, sir.

Q. Further in your summarization on table 18, Mr. Schaefer just asked you about, the highest bacterial count that you found in the glass bottle was 62000, as compared with 43500 in the paper?

A. Yes, sir.

Q. And your lowest bacterial count that you found in the glass bottle was 30000, as compared with 23000 in the paper?

A. That is right.

Q. Concerning this length of time that the board is in the drying process, the longer it is in the drying process, the less chance for bacteria to live?

A. That is right.

Q. That is due to the heat and the pressure that will dry them out and give them nothing to live on?

A. It is largely due to heat.

Q. And the further fact that any water that is left there for them to feed on will be taken out?

A. Yes, sir.

Mr. Gariepy: That is all.

Mr. Schaefer: I have one more question.

564

Examination by Mr. Schaefer.

Q. What did you mean by this statement, Doctor, which precedes your table 18:

"We were not satisfied with the degree of sterilization that was achieved in the glass bottles as was indicated by the bacterial count of the control bottle?"

A. I meant we were not satisfied with the sterility factor or the comparison factor, upon which we were going to base our counts in paper, later.

Mr. Schaefer: I see. That is all, Master.

Mr. Gariepy: I will ask to have this document marked as plaintiff's exhibit 43 for identification.

The Master: It may be so marked.

(The single sheet referred to was thereupon marked by the Reporter "Plaintiff's Exhibit No. 43 for identification.")

Mr. Gariepy: I have a few questions, Master

Examination by Mr. Gariepy.

Q. Doctor, concerning these tests, one there was nested containers?

A. Do you mean nesting?

Q. I mean nestling, as we call it in the navy, as 565 we nestle a boat.

A. I beg your pardon.

Q. I show you plaintiff's exhibit 43 for identification, which purports to be descriptive data of the paper milk bottles, Seal Rite Company, in cone shape fashion. Are those the type of containers that you used in performing these tests as shown in your report in 1938?

A. No, not in 1938.

Q. 1937, I mean.

A. 1937—these were not the containers.

Q. Were they that style and shape with regard to the nesting?

A. These can not be nested.

Q. Those are the ones at the bottom that you can take out?

A. This is the one you can take out.

Q. And you can put your fingers through the top?

A. That is the way they do it.

Q. The cap is put on after the milk is poured in?

A. It can be capped in an ordinary bottle machine.

Q. Do you know whether or not the same material is used in that style container, the Seal Rite, that is used in the container of the cap?

A. Not the hood cap, but the disc cap.

566 Q. It is the same material?

A. Yes, it is the same material.

Q. Have you performed tests on those caps?

A. Yes, sir.

Q. Seal Rite caps?

A. Yes, sir.

Q. Isn't that the common accepted cap that is used today on the glass bottle, Seal Rite?

A. It is one of the largest cap manufacturing concerns in the country.

Q. Is that made out of virgin spruce pulp?

A. That is made out of ground spruce wood pulp.

The Master: Q. What do you mean by "nesting"?

A. One container will slip into the other for practically its whole distance or for just a short lip out.

Q. What is the purpose of that?

A. Well, you can close your smaller end of the container and have that as a practical closure in the factory or in the fabrication plant, and they are put up in nests of fifty containers, one inserted into the others and it makes a roll about so long (indicating). They are encased in white waxed paper, fashioned in such a way that you can take the paper off either after it has been set down on its housing on the filler, the bottle filled—and 567 in that way there is only one possible container that can be exposed on the outside conditions, and that is the last one in the next, and the rest are protected by the adjoining fellows.

Mr. Gariepy: Q. In these tests you took out the ones that were exposed on the outside and disregarded those?

A. No. Those were included in this set-up.

The Master: Q. You are connected with Bucknell University?

A. Yes, sir.

Q. Have you done any work for these paper manufacturers in the past?

A. I did control work for the Foster Paper Company and for the Seal Rite Company, or the Fulton Company after these first tests as reported here were revealed to them. They asked for the conditions that they could control in their plant in the way of chlorination of water supply and things of that sort and then asked for a re-check for comparison.

Q. How do you happen to be working on these paper problems?

A. Well, became interested in 1926 when a dairy came to me and asked me to find the source of a sweet curd and ropy milk in their plant.

568 Q. Where were you at that time?

A. I was at the college, and the plant survey failed to reveal those conditions and I got a hunch at that time

"I wonder what the bottle cap does to a bottle of milk", and that started the whole thing going.

Q. Is there any endowment at your college for the carrying on of this kind of work?

A. No. It comes out of the general budget for the department.

Q. There was some testimony here that at some colleges, either the dairies or the paper companies created a fund for the carrying on of experiments along those lines. I was wondering whether the same condition existed at your college?

A. We have no fixed fund of that sort.

Q. You say you have, however, done some work for this dairy company that you mentioned?

A. Yes, sir.

Q. Any others?

A. That is the only one.

Q. Any paper companies?

A. Only those checks for plants I just mentioned, that was the Foster Paper Company and the Seal Rite Company.

Mr. Schaefer: Q. And the Vortex?

569 A. That was the other container set-up.

The Master: Is there anything further?

Mr. Gariepy: Yes. While the Master has made that inquiry, I think it is pertinent:

Q. Doctor, I will ask whether you have ever been requested to do any work for the Cherry River Paper Company?

A. Not directly.

Q. Have you ever been to the mills and examined the technique of the manufacture of paper board?

A. That was Dr. Sanborn's function.

Q. You had nothing to do with it?

A. I had something to do with the summer surveys.

Q. This Fulton Company is the Seal Rite Corporation, Inc., of New York?

A. Yes, sir.

Q. As shown in plaintiff's exhibit 43 for identification?

A. Yes, sir.

Mr. Gariepy: I offer this article in evidence which has been marked plaintiff's exhibit 43 for identification.

The Master: It may be received. There are no objections, are there?

Mr. Schaefer: I object.

570 Mr. Gariepy: What is your objection to it?

The Master: Oh, let it go in. It may be received.

(Said single sheet document so offered and received in evidence was marked "PLAINTIFF'S EXHIBIT NO. 43", and is attached hereto and made a part hereof.)

The Master: Q. Are you associated with Dr. Sanborn?

A. I am a part time investigator in his department, invited there by Dr. Breed.

Q. What is his department?

A. The Division of Bacteriology at the New York State Agricultural Experiment Station at Geneva.

Q. You mean you go over there and conduct experiments at his laboratory?

A. I am there two months.

Q. Two months each year?

A. I am there two months each summer time.

Q. Who is Dr. Breed?

A. Dr. Robert S. Breed is Chairman of the Division of Bacteriology at the Geneva Experiment Station.

Q. You are going back there this summer to do some work?

A. I am there now—supposed to be there now. I left there yesterday.

The Master: Are there any further questions for 571 this witness?

Mr. Schaefer: This document that has just been introduced, I would like to ask the Master to read that.

Mr. Gariepy. The Master is not bound by the advertising. I only asked its admission in reference to the company. It is the Seal Rite Company.

Mr. Schaefer: The witness has said for whom he did the work.

Mr. Gariepy: The Master isn't bound by their advertising. It is for identification purposes.

The Master: Let me look at this a minute.

(Discussion off the record.)

The Master: Upon further consideration, it being stated that the only purpose of the introduction of the exhibit, plaintiff's exhibit 43, would be to identify the Seal Rite Company, Inc. as the Fulton Company, referred to by the witness, I believe that the exhibit should be excluded because the witness has already stated that the Seal Rite Company is the Fulton Company.

Are there any further questions for this witness?

Mr. Gariepy: Yes.

Q. The cone shaped container that you referred to 572 as nesting, is made of that shape there?

A. It is not that set-up.

Q. It is not that set-up, but it is that shape, is it not?

A. Yes, it is that shape.

Mr. Schaefer: The Seal Rite Container is not a nested container.

The Witness: No, sir.

Mr. Gariepy: That is all.

The Master: Are there any further questions now for the witness?

(No response.)

The Master: That is all, Doctor.

(Witness excused.)

(Discussion off the record.)

(Thereupon, the further hearing in the within cause was continued until 10:00 o'clock, a. m. on the 5th day of July, 1939.)

573

• • (Caption) • •

Wednesday, July 5, 1939,
10 o'clock A. M.

Met pursuant to adjournment.

Present:

Frederick A. Gariepy, Owen Rall, of counsel, on behalf of plaintiff;

Barnet Hodes, Corporation Counsel, City of Chicago, by Walter V. Schaefer and Charles P. Horan, Assistants Corporation Counsel, on behalf of defendants.

574 The Master: You may proceed.

Mr. Gariepy: Mrs. Koller, will you step forward, please?

MARGARET M. KOLLER, called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. State your name, please.

A. Margaret M. Koller.

Q. What is your address?

A. 307 South Illinois avenue, Villa Park, Illinois.

Q. What is your business or occupation?

A. Director of Koller-Koller, Inc., Laboratory.

Q. Have you any degrees with regard to any science.

A. A Bachelor degree and a Master of Science.

Q. From what schools did you obtain such degrees?

A. DePaul University.

Q. What does Koller-Koller Laboratory, Inc., do at Villa Park, Illinois?

A. We act as a health department laboratory for a number of the west suburban towns and also do some work for dairies.

575 Q. How long have you so acted and how long have you done such work?

A. We have been in business for about ten years and done city work for the last eight.

Q. Will you name the cities or municipalities for which you do laboratory work and describe the kind of work you do for them?

A. We are retained on a yearly basis by Maywood, Glen Ellyn, and Villa Park, to do all of their milk and water inspection and also city laboratory work and then there are about twenty of the other outlying suburban towns that we do work for whenever they ask for it, but not on a continual basis.

Q. Will you name those outlying towns for whom you do laboratory work?

A. DeKalb, Naperville, Wheaton, Elmwood Park, Cicero, Hinsdale, River Grove. That is about all of those Western Towns now.

Q. Do you do laboratory work in the way of bacterial inspection for dairies?

A. Yes.

Q. Will you name the dairies for whom you do such work?

A. At some time or another I believe we have done work for practically all dairies in that locality.

Q. Name them.

A. Willow Farms at LaGrange, Rabe at Elmhurst, Cloverleaf Dairy at Addison.

576 Q. Did you do work for the Geneva Dairy?

A. We did. They are out of business now.

Q. Otter-Pohl?

A. Yes.

Q. Maywood Farms?

A. Yes. There are about twelve dairies in DeKalb.

Q. Chicago Guernsey Farm?

A. Yes. Then we check all the Chicago trucks that come into the western suburbs, take samples from them.

Q. Samples of milk?

A. Yes, milk and cream, chocolate milk.

The Master: Off the record.

(Discussion off the record.)

The Master: Q. When you talked about Chicago trucks coming into the suburbs did you mean trucks that came from Chicago or trucks that were on their way to Chicago?

A. Trucks that came from Chicago to the suburbs.

Q. Is milk delivered from Chicago dairies to the suburbs?

A. Yes, it is.

The Master: All right, now, Mr. Gariepy, put your next question.

Mr. Gariepy: Q. How often have you done that, Mrs. Koller?

A. Whenever the health department orders it. Probably an average of once a month.

577 The Master: Q. What health department?

A. Sometimes Maywood health department say they want samples checked over on everything coming into town, and other times other towns want things checked up.

The Master: All right.

Mr. Gariepy: Q. Have you a license under the statute as a milk and cream tester?

A. Yes.

Q. Have you that license with you?

A. Yes. (Handing documents to Mr. Gariepy.)

Mr. Gariepy: Counsel, I show you a license. Can it be agreed that she is licensed under Section 20(a) of the Illinois Dairy and Food Law to test and sample milk, test, grade and sample milk and cream?

Mr. Schaefer: To test, grade and sample cream and to test and sample milk.

Mr. Gariepy: Yes.

Mr. Schaefer: Yes, that can be agreed.

Mr. Gariepy: Q. How many years have you been so licensed by the State of Illinois, Mrs. Koller?

A. That paper there is the first license, the one you have folded up in front of you.

Q. Since 1930, February 5th?

A. Yes. That has been in force continuously since 578 that time. It has been renewed.

Q. Have you been actively following this pursuit with regard to testing milk and cream?

A. Yes.

Q. Since 1930?

A. Yes.

Q. Have you had occasion during the last year, 1938 and 1939, to become acquainted with the Pure-Pak container?

A. Yes.

Q. Have you had occasion to become acquainted with any other paper containers used for the packaging and distribution of milk?

A. Yes.

Q. When did you first become acquainted with such containers?

A. Oh, I think about May or June last year, when the application was filed to deliver milk in paper containers in some of the western suburbs.

Q. What did you do in connection with the inquiry concerning the fitness or unfitness of such paper containers?

A. I asked for from three to six months to go into the thing and read up on it and find out how far they had progressed with paper containers and make a little experimental work of my own, in order to give an answer to the health officers.

579 Q. What tests did you perform, Mrs. Koller, from May, 1938, to date, with regard to the fitness or unfitness of the Pure-Pak container as a receptacle for the distribution of milk and packaging of the same?

A. In our own laboratory we were not set up to make the tests on the raw board, that is, the bacterial counts and tearing this paper to pieces, as they do in the making of those counts on the raw material, so we had to confine most of our own testing to sterile rinses; getting these containers and have them stand around for a month and testing them when they come in and then testing them at the end of the month, and so on, to see how they held up under storage conditions; and the other information we had to rely on from people who had had more experience than we did and had done more work on it.

Mr. Schaefer: I move to strike the last portion of that answer, which is not responsive to the question.

The Master: I will let it stand.

Mr. Gariepy: Q. Have you had occasion to perform tests with regard to the bacteria count in milk sold in the suburbs from dairies that are selling milk in the city of 580 Chicago, both in the glass and in the paper containers, especially the Pure-Pak container.

A. Yes.

Mr. Schaefer: May I have that question read, please?

(Mr. Gariepy's last question was read by the reporter as above reported.)

Mr. Gariepy: Q. Mrs. Koller, before I follow on with that question, will you tell me the result of the rinse tests that you performed on the paper container from May, 1938, to date.

A. Well, in no case did we find a count higher than we would have found in glass bottles.

Mr. Schaefer: I move to strike that.

The Master: What is that?

Mr. Schaefer: I move that that be stricken.

The Master: I will sustain the objection. The answer may be stricken.

Mr. Gariepy: Q. Mr. Koller, have you a list of the results of your experiments on the glass bottle as compared with the paper bottle, on milk, since May, 1938, delivered from these dairies?

A. I have records on it, yes.

Q. And have you those records here?

A. I haven't them here. I think you have them.

The Master: Q. What do you mean by the rinse test?

581 A. We take an empty paper bottle and we rinse it with sterile water. We use 10 cc. of sterile water and rinse the interior of the bottle and plate the rinse water.

Q. What?

A. Make a bacteria count on that rinse water to see how many organisms will be washed off inside of the bottle.

Q. Where did you get the container? Did you pick it up yourself?

A. No, I had it sent to me from companies that wanted to sell those containers. We had some shipped to us from New Jersey, the American Can container, and then we had Mr. Dean send in some of these Pure-Pak containers.

Q. That is, the containers all—

A. Sealed up.

Q. (Continuing.) —sealed up?

A. With no milk in them.

Q. With no milk?

A. Yes. I went down to the dairy and selected the ones that were shipped in. I took them right out of the storage room from the American Can and the Chicago dairy.

Q. If you took them out of the dairies, they were not in a store room, were they?

A. Some of them were. Some I took right from 582 the store room, just under the regular manufacturing conditions, just the same as they would get them.

Q. Let us see. Usually the containers are not all made up, are they?

A. The American Can container is.

Q. All made up?

A. All made up.

Q. And sealed?

A. And sealed.

Q. How can they get milk into it, if they get it sealed?

A. A vacuum pulls open the paper top and then that is filled and it is resealed.

Q. What do you do with the Pure-Pak container; is that all made up?

A. We had those sent in to us all made up and waxed, but no milk. It had to go through the machine and sealed and no milk put in.

Q. Then you opened up the lip?

A. We opened it after we received it.

Q. What did you open up? The lip?

A. Yes.

Q. The pouring lip?

A. Yes.

Q. And then you put in the water?

A. Yes.

Mr. Garipey: Q. Calling your attention to about the month of December, 1938, did you have occasion to perform comparative tests on milk sold in glass bottles 583 and in paper bottles by the Borden-Wieland Company?

A. Yes.

Q. I show you what purports to be a statement of your report for December 2, 1938. Was that prepared by you?

A. This is November, 1938, on here.

Q. It is dated at the top?

A. Yes, that is the date the report went out. Yes, this is one of our reports.

Q. Did you perform those tests yourself, Mrs. Koller?

A. Yes.

Q. At your laboratory?

A. Yes.

Q. And where did you obtain the receptacles, first the glass, and then the paper?

A. I took these at the Forest Park, Illinois, plant.

The Master: Q. Of whom?

A. Borden-Wieland.

Q. Take those? How many did you have?

A. I had four bottles. One was a quart bottle of milk and it was dated to be sold before noon Wednesday, and that was in a paper bottle. I took another paper bottle of milk to be sold before noon, and then I took two empty bottles, two empty containers, and I took those right out of the stock room.

Mr. Garipey: Q. What did you find in performing 584 the test on each?

Mr. Schaefer: Just a moment. I would like to see the exhibit before you testify to it.

(The witness handed the document referred to to Mr. Schaefer.)

Mr. Schaefer: If the Master please, this exhibit has no reference to the original question which was asked, which was as to comparative counts on milk in glass and paper, which was Mr. Garipey's original question.

The Master: He is starting out to ask her the count on paper. I don't know. I suppose he is going to follow up with the count on glass bottles.

Mr. Schaefer: There has been no testimony that a comparative count on glass has been run.

The Master: Q. Did you conduct any tests on glass milk bottles?

A. Yes.

Mr. Schaefer: Q. Comparative tests?

A. I did comparative tests.

The Master: Let us see now. He is giving part of it at a time now.

Mr. Garipey: Q. Mrs. Koller, with regard to this sheet dated December 2, 1932, and the tabulation hereon concerning these tests and the counts, you made those 585 yourself?

A. Yes.

Q. Will you tell what you found in performing those experiments on the paper bottle, and the date?

A. The empty milk bottles you want first?

Q. Yes.

A. Both of these empty containers gave sterile plates.

Q. Which means what?

The Master: Q. Both of these empty containers did what?

A. Gave us a sterile plate. That is when we plated this rinse water.

Q. And you mean by that what?

A. There was no bacterial growth. We did not get a growth on any of the plates on the rinse and the milk from these paper containers filled at this time showed a 2,000 count, which is very low.

Mr. Gariepy: Q. Did you tell the dairy from which you obtained those?

A. Yes.

Mr. Schaefer: Q. Both of those two quarts of milk had a 2,000 count?

A. Yes.

Q. Each of them had a 2,000 count?

586 A. Yes.

Mr. Gariepy: Q. What is the standard count allowed, Mrs. Koller, per quart?

A. Our local ordinance names 30,000 or less; 30,000 is the maximum on a pasteurized bottle.

The Master: Q. Thirty thousand what?

A. Bacteria per cc., according to the standard method.

Mr. Gariepy: Speak louder, Mrs. Koller, so Mr. Schaefer can hear you.

The Master: Q. Any particular kind of bacteria?

A. Well, we generally check, as you can see here, for haemolytic contamination and for a presumptive colon contamination. The other is not identified ordinarily, unless we get a very high count and we try to find out the cause.

Q. Do you test for tubercular bacilli?

A. Not in the pasteurized bottle, no; unless the count is excessive we do not do that or unless we find it is not properly pasteurized. If it is not a properly pasteurized bottle, it should be destroyed.

Mr. Gariepy: Q. Did you in the month of December,

1938, on behalf of the town of Cicero, perform certain experiments on empty paper containers submitted to you for examination?

587 A. I would like to keep some of these things off the record, Mr. Gariepy, if we are going to go into the counts.

Q. I didn't hear you.

A. I say I would like to have some of these names off the record, if you are going to go into private accounts. I don't know whether these towns would like to have these all broadcast. This is for our own home town, that one happens to be, and I know I can do that on this one.

The Master: Q. Which one?

A. That one happens to be made for Villa Park.

Mr. Gariepy: Q. Will you look at this report of December 9, 1938, concerning which I just asked you a question, and tell me whether that was prepared by you on Bowman paper containers?

A. Yes, it was.

Q. And at your laboratory?

A. Yes.

Q. And what test did you perform to secure the results therein tabulated?

A. The sterile rinse.

Q. How many days did you take and how many tests did you perform?

A. The Cicero inspector brought these in.

The Master: Q. What is that?

588 A. I say this inspector brought these in, the inspector of this town brought these in, and I worked on them just as he brought them in.

Mr. Gariepy: Q. And it showed what?

A. Five bacteria on one sample and sterile on the other.

The Master: Q. Those are empty containers?

A. Yes, your Honor.

Mr. Gariepy: Q. What type of a container is that, with regard to being Pure-Pak or not?

A. No, this was the American Can container.

Mr. Schaefer: If I may interrupt, just to have it all in one place in the record, I would like to ask a question.

Q. What was the Villa Park container?

A. That was American Can, too.

The Master: Q. You just took two containers; you don't know where they came from, except they were brought in by the inspector?

A. The inspector brought them in, yes.

Mr. Gariepy: Q. Mrs. Koller, in the month of February, 1939, did you make tests on certain samples of milk from the Bowman Dairy Company in West Chicago, Illinois?

A. I don't remember.

589 Q. Will you look at this sheet dated February 23, 1939, with regard to that question?

A. Yes, I did.

Q. And where did you obtain the bottles or the containers on which you performed those tests?

A. I got one from an Atlantic & Pacific store at 210 Main street.

The Master: Q. What city?

A. In West Chicago, store No. 1442, at 12:15 noon time, and then I took a glass bottle on the same day from Bowman's truck No. 1665, bought it from a driver by the name of H. Beauchamp at 12:45, a half hour later.

Mr. Gariepy: Q. What tests did you perform and what did you find?

A. We made a—

Mr. Schaefer: I don't object to what you did perform. I will object to what you did find.

The Witness: Would you like to have this, Mr. Schaefer? (Handing document to counsel.)

The Master: Q. What tests did you perform? First tell us that.

A. We made a routine examination on the milk in both containers.

Q. When you say "we," who is "we"?

590 A. Well, in the laboratory, I made them myself.

Q. You did it yourself?

A. Yes.

Q. Did anybody assist you?

A. We generally have someone there to do the sterilizing.

Q. You tested the milk in each of these containers?

A. Yes.

Q. For bacilli and what is it—haemolytic—

A. Just a routine test that we run generally.

Q. And colon bacilli?

A. Yes.

Mr. Gariepy: Q. What results did you find as a result of those tests, Mrs. Koller?

Mr. Schaefer: That is objected to.

The Master: What is the ground of the objection?

Mr. Schaefer: The main ground of the objection is that the dairy in question here is not and has not been shown to be a dairy which is licensed to pasteurize milk for sale in the city of Chicago. With conditions in the dairies in the suburbs we are not here concerned. Their conditions may be good, they may be bad, but whatever they are makes no difference in the record here in this case. Here is the dairy out in West Chicago.

The Witness: No, this is Bowman Dairy.

Mr. Schaefer: This is a Bowman Dairy in West Chicago.

591 The Witness: No, they are delivering there. They have no dairy in West Chicago.

The Master: What?

The Witness: They deliver at West Chicago, but they have no dairy in West Chicago. The trucks go out to the suburbs.

The Master: Where do they come from?

The Witness: They come from the Forest Park plant, right there on the border line.

The Master: Is that the same Bowman Dairy Company that delivers in Chicago?

The Witness: Yes. Of course, they have different plants.

Mr. Schaefer: Do you know of your own knowledge whether or not the Forest Park Bowman plant delivers in the city of Chicago?

The Witness: No, I don't know.

The Master: I will let her answer.

Mr. Gariepy: Q. Tell your results, Mrs. Koller, please.

A. A quart of milk in the paper bottle—

Mr. Schaefer: Now, there is further ground of objection, if I may interrupt, please. There is no showing that these—

I take it, these purport to be comparative tests. Two
592 containers were glass, Mrs. Koller, and one was paper?

The Witness: Yes.

The Master: What is that?

Mr. Schaefer: Two were glass and one was paper.

The Witness: That is right.

Mr. Schaefer: They purport to be comparative tests. There is no showing that the milk was obtained at the same time under the same conditions at all. That is, we have not here a comparison at all.

The Master: Q. Whose milk was this that you got from the A & P?

A. Bowman Dairy.

Q. Both of them Bowman Dairy?

A. Yes. You see the store handles the paper container and you have to get the bottle off the truck.

Q. Did you obtain the milk on the same day?

A. The same day, a half hour apart. One was obtained at 12:15 and the other at 12:45, in the same town.

Q. And both the paper and glass bottle containers had marks on them to be sold before noon Wednesday?

A. That is right.

The Master: I will let her answer.

The Witness: That is as close as you can get it.

593 Mr. Schaefer: I move to strike that, if the Master please.

Mr. Gariepy: I didn't hear it, whatever it was.

The Master: What?

Mr. Schaefer: I suggest that volunteered remark be stricken.

The Master: Yes, that may be stricken.

Mr. Gariepy: Well, I didn't hear it.

The Master: Q. That is, they were both purchased in the same city?

A. Yes.

Q. One in an A & P store?

A. Yes.

A. That is the paper container?

A. Yes, sir.

Q. The two glass containers were purchased from a truck in the same city?

A. Yes.

Q. And all three containers had marks on them that they were to be sold before noon Wednesday?

A. That is right.

Q. And they were all Bowman milk?

A. All Bowman milk. The paper bottle showed a 1,000 count and the glass bottle—

Q. Now, wait a minute. The contents of the paper bottle?

A. Yes.

594 Q. That is the milk?

A. Yes.

Q. Showed a 1,000 count?

A. Yes, and the glass bottle, contents of the glass bottle, 9,000.

Q. Nine thousand?

A. Yes.

Q. Both glass bottles?

A. Well, the cream, of course, you can't compare the cream count with the milk.

Q. I see. Just the milk?

A. Just the milk, yes.

Mr. Gariepy: Q. Is that all that you found in those tests, Mrs. Koller?

A. Yes.

The Master: Q. Did you conduct any tests at any time not shown in these particular reports which showed that the milk in the paper container contained more bacteria than the milk in the glass bottle container?

A. Well, you see, with the Dean set-up, they have no glass bottles. I mean, we cannot get a comparison between paper and glass there. But on these ones we were able to get it. We have not found the count to be excessive in any paper container.

Q. In the Dean?

A. Yes.

Q. Did you ever find in a Dean paper container milk containing a bacteria count of 9,000?

A. Oh, yes, we have had from Dean in paper 9,000, 595 but we have no comparative check on that in glass bottles, because they don't bottle anything in glass.

Q. Would you say that in this particular instance the 1,000 count in the paper bottle and the 9,000 count in the glass bottle indicated that there was something other than the bacteria in the milk itself that caused the difference?

A. Not necessarily, no. One bottle was off the truck and the temperature may not have been as good as it was in the store icebox. Both bottles may have been just exactly the same to begin with. We just did this as a matter of comparison, to find out for our own records whether or not there was any difference.

Mr. Gariepy: Q. Did you have occasion during the

month of October, 1938, to perform certain tests on a glass bottle, of milk, for the town of Cicero?

A. Do we have to have all of this in the record, Mr. Gariepy?

Q. Well, I think we ought to go that far, anyway. What is the answer, yes or no?

A. Yes.

Q. Was that at your laboratory?

A. Yes.

Q. Who brought the milk or the sample in to you for the performance of this test?

596 A. The city inspector.

Q. Of the city of Cicero?

A. Yes.

Q. And without regard to revealing the name of the dairy from which this sample was obtained, will you tell the Master what your test and examination showed as to the contents of said quart bottle of milk, in the glass bottle?

Mr. Schaefer: Just a minute. May I see that, please?

The Master: Yes. Let Mr. Schaefer look at it.

(The witness here handed a document to Mr. Schaefer.)

The Master: I notice the sheets at which you have been looking are the originals.

The Witness: I have copies of my own to complete the file in the laboratory.

The Master: These are all copies?

The Witness: These are all copies of our carbon copies. We have some of the other carbons here, where we did not have time to get them all done.

Mr. Gariepy: Q. They were made at the same time the originals were made, in the same machine?

A. Yes.

Mr. Schaefer: Now, if the Master please, here is a dairy that I am certain does not sell in the city of Chicago.
597 Here is a count in a one-quart glass bottle of milk which is above the maximum permitted generally by ordinances of municipalities in this vicinity and I think generally throughout the country. Now, I am going to bring out the name of this dairy. I see no reason for this examination in giving other dairies black eyes. This test has no possible bearing upon any of the issues in this case. A one-quart glass bottle of milk in the city of Cicero has a count beyond the permissible maximum in the city of Chicago. That dairy is not under our inspection. What possi-

ble value that could be in determining the issue here I am at a loss to see.

Mr. Gariepy: My answer to that is that this milk is bottled in your glass bottle and the occasion for the contamination and so on is the same in the town of Cicero in this dairy as it is in any dairy in the city of Chicago where you permit the milk to be bottled in glass. The same occasion for contamination that exists at this dairy for bottles of milk under glass is just as possible in the city of Chicago today as in this instance.

Mr. Schaefer: Let me ask the witness a question.

Q. Do you know what the source of 50,000 count 598 on this bottle was?

A. I have a pretty good idea. Sediment in the bottle.

Mr. Schaefer: If the Master please, my objection still stands.

The Master: Q. What would you say was the source?

Mr. Schaefer: She said sediment in the bottle.

The Master: Sediment in the bottle?

Mr. Schaefer: Yes.

The Master: Q. Sediment from the milk?

A. Well, I don't like to divulge the name of any dairy here, because it is sometimes unavoidable, I presume.

Q. You would know where this material came from, would you?

A. I feel someone was very careless at the plant.

Mr. Schaefer: It is not under out inspection.

Mr. Gariepy: I will withdraw that question and put another one.

Q. Mrs. Koller, did you have occasion, in the month of January, 1939, to sample the adhesive or paste from the Chemung Dairy of the plaintiff milk plant?

A. Yes.

Q. I show you a report with regard to January, 1939. Did you prepare that report and make that test thereon?

A. Yes, I did.

599 Mr. Gariepy: Q. Where did you obtain the paste, or adhesive?

A. I took it from an unopened drum of paste out at the stock room in the plant, to see whether or not the paste was coming in in good shape.

Q. What did your examination of that paste at your laboratory reveal under date of January 11, 1939?

A. It showed that the paste as received was all right.

Q. What do you mean by "all right"? That doesn't mean anything?

A. We didn't get a growth on a plate.

Q. It was sterile, then?

A. It was sterile.

Q. It was negative with regard to a growth being present?

A. Yes.

The Master: Q. Paste for what?

A. A paste that they paste up the seam on the bottle. There is one seam in the bottle that is pasted.

Mr. Gariepy: Q. I show you plaintiff's exhibit 2. Will you indicate to the Master where that paste came from which was used in the bottle that you performed this test on on January 11, 1939?

A. You see, they paste the bottom up, here (indicating).

600 The Master: Q. You didn't get the paste off of the bottom or the sides, did you?

A. No. I took it out of the stock room as they received it in the plant.

Q. That is what it was used for?

A. Yes, sir.

Q. You didn't take it off of the container?

A. Not off of here, no.

Mr. Gariepy: Q. Would you indicate to the Master?

A. That is the paste that is used for this seam (indicating on plaintiff's exhibit 2).

The Master: Q. The paste that simply closes up this container?

A. Yes.

Mr. Gariepy: Q. What did you do in performing the test on the adhesive on January 11, 1939? Describe to the Master how you performed it?

A. We weighed out a gram of paste in a sterile beater and washed it with sterile water and made 100 c. c. dilution of it in sterile water and then plated one c. c. count of that.

Q. Calling your attention to February 20, 1939, did you perform certain experiments with regard to the plaintiff's milk in the town of Elmwood Park, as sold in the Pure-Pak Container?

601 A. I don't know.

Q. Will you explain to the Master where you obtained the milk under date of February 20, 1939?

A. In the National Tea Company located at 7546 Di-
versey Avenue, at three o'clock in the afternoon.

Q. What test did you perform?

A. The official plate count at that time was three thou-
sand.

The Master: Q. What?

A. This was a bottle of Dean's milk.

Q. What did you perform the test on—the milk?

A. The milk.

Mr. Gariepy: Q. What was the number of bacteria
count in the quart?

A. Three thousand.

Q. That milk was obtained in the same container as
plaintiff's exhibit 2, here?

A. One like that, yes.

Q. On March 21, 1939, for and on behalf of the Village
of Glyn Ellen, did you have occasion to perform certain
tests on milk in plaintiff's containers?

A. I don't remember.

Q. On March 21, 1939?

A. Yes, we purchased samples from the National Tea
Company, 536 Crescent Avenue.

602 Q. What time?

A. At 11:45 o'clock, a. m.

Q. Milk to be sold when?

A. Before noon, Wednesday.

Q. What did you do with the milk you obtained in that
sample?

A. Ran the routine official plate count, and on the quart
bottle got a count of one thousand; and the quart of choco-
late drink, a count of one thousand; on a half pint of 22
per cent cream, two thousand; on a half pint of whipping
cream, 32 per cent, eight thousand.

Q. How do you account for the eight thousand in the
half pint of Grade A whipping cream?

A. We allow a higher bacterial content in cream. In
separating, the bacteria goes in with the cream, more of
the bacteria goes in with the cream than the milk.

Q. How much is allowed and still to be sterile?

A. Sixty thousand. It is double the milk.

The Master: Q. This doesn't show what dairy it was,
does it? This is Dean's?

A. Yes.

Q. From Glen Ellyn?

A. Yes, sir.

603 Mr. Gariepy: Q. With regard to the B-coli present, did you find any?

A. No.

Q. As late as May 23, 1939 did you have occasion to make further checks on the plaintiff's milk sold in the Pure-Pak Container for the town of Glen Ellyn?

A. I don't remember.

Q. Where did you obtain that sample, and when?

A. We got this from Tauber's Delicatessen Store.

The Master: Is that Tauber's?

A. Yes.

Mr. Gariepy: Q. At what time?

A. 2:35 p. m. on May 23, 1939. Quart of milk had one thousand count; the one-half pint of 22 per cent cream had a count of two thousand; the one-half pint of 32 per cent cream had a count of four thousand.

The Master: Q. Was that all in paper bottles?

A. All in paper.

Mr. Gariepy: Q. The B-coli present was what?

A. Negative.

Q. Mrs. Koller, there has been some testimony here by you and by others with regard to the amount of bacteria permitted present in a bottle of milk, and in the bottle without milk. I will ask you this question: do you know how much bacteria is present in the human body, the ordinary human body?

604 Mr. Schaefer: That is objected to.

The Master: Objection sustained.

Mr. Gariepy: Q. Have you in any of the tests that you have run on the milk in the Pure-Pak Container from May, 1938 up until this date found bacteria contained in the quart bottle of milk in the Pure-Pak Container in excess of six thousand?

A. I don't remember, but I doubt it. If we find high ones we always send them a letter on it, and I don't recall sending any letter.

Q. Are you acquainted with the health officials and the health authorities in the western suburbs from Oak Park west to West Chicago, Illinois?

A. Yes.

Q. Did you have occasion to meet with them last month in the City of Chicago, with regard to the matter of the use

of the Pure-Pak Container and the American Can Company Container in said sub- bs?

Mr. Schaefer: That is objected to as immaterial.

The Master: I will let her answer, yes or no.

A. We had our regular meeting at that time.

Mr. Gariepy: Q. Who was at that regular meeting?

Mr. Schaefer: I was just trying to save time.

The Master: What is the materiality of this?

605 Mr. Gariepy: The materiality is to show that the health officials from the villages west from Oak Park have gone on record as prohibiting the sale of milk in glass bottles, and allowing it to be sold only in paper bottles, going into home where contagion is present, the same as in Reading, Pennsylvania.

The Master: Is there any controversy about that?

Mr. Schaefer: There isn't any controversy about it. I don't know whether it is a fact or not.

The Master: You can cross examine her on it.

Mr. Schaefer: On the other hand, if it is not a fact, we can require broader proof of the fact.

Mr. Gariepy: You certainly can.

Mr. Schaefer: Just let me finish. I am willing to agree that the municipalities you enumerate, that those municipalities require—if you will—I think what you want is "prefer" or "advise" the use of paper containers in cases where milk is being delivered to homes afflicted by communicable disease.

Mr. Gariepy: Rather than accept your qualifications, I would rather have the witness tell whether they require them or whether they "advised" them. She was present at the meeting.

The Master: Ask the question.

Mr. Gariepy: You objected a moment ago.

606 Q. Will you tell what action was taken by the officials of the health bodies of the villages west from Oak Park to West Chicago, Illinois? First where was the meeting held, at the Steuben Club?

A. The Swedish Club.

Q. Name those who were present?

A. Dr. Miller of Oak Park, Dr. Weinberg of Maywood, Dr. Perkins of West Chicago, I believe Dr. Watson from Glen Ellyn was there, Dr. Fuller of Riverside. There were about twelve at this particular meeting.

Q. What action was taken at that meeting by these

health officials with regard to the use of the Pure-Pak and the American Can Containers in such suburbs where there was a communicable disease in the homes or in the factory?

Mr. Schaefer: I object to it.

The Master: Objection sustained.

Mr. Gariepy: I offer to prove by this witness, if allowed to answer the questions, that these officials went on record as prohibiting milk in the glass bottles.

A. No, they didn't—

Mr. Gariepy: You don't answer until the Master says you should do so.

The Master: There is no way of proving official actions other than by the meeting of the boards of health of 607 the different villages.

Mr. Gariepy: Q. Were they an unincorporated association?

A. Yes, sir.

Q. Were minutes kept of that meeting?

A. Yes, sir.

Q. Who kept the minutes of the meeting?

A. Dr. Weinberg.

Q. Of what town?

A. Maywood.

The Master: I don't know whether that is material. The action of the board of health of the particular municipality is not the action of some unincorporated group or a group of health officials.

Mr. Schaefer: It may be that the officials of the boards of health did not have the power, as a matter of law, to take such action.

The Master: Not the municipal authorities—just some representatives getting together in a meeting.

Mr. Gariepy: If the officials got together, and the board of health ratified their action, that is their action and it stands of record; Mr. Schaefer can not impeach it, nor can you or I; it is official.

The Master: Let's go ahead. I don't think it is material.

608 Mr. Gariepy: I want to make my offer of proof and it will be up to the Master to rule on it.

The Master: Go ahead.

Mr. Gariepy: Q. Mrs. Koller, have you in any of the experiments you have run from May, 1938 to the present,

had any occasion to encounter or find any such substance as saffranin in the milk in the Pure-Pak Container or the American Can Container, on which you performed certain experiments, which you related this morning—that is the paper board or Pure-Pak Container used by the plaintiff, Fieldcrest Dairies, here?

A. (Not answered.)

The Master: You did not conduct any experiments to find out what was in the board.

The Witness: No, I did not.

Mr. Gariepy: Q. Did you, in examining any of the contents of the many Pure-Pak Containers, from May up to the present time, have any occasion to detect any saffranin in said milk?

A. No, there is nothing to lead me to believe there was any there.

Q. Even in the glass bottle, did you have any occasion in the glass bottle to find saffranin?

A. No.

609 Q. Did you ever hear of saffranin being found in Grade A milk?

A. No, I didn't.

Q. Do you know a dairy known as the "Chicago Guernsey Farms"?

A. Yes, sir.

Q. Do you know whether they sell milk in the City of Chicago, under permit?

A. I believe they sell certified milk.

Q. What is certified milk? Explain it for the Master, will you?

A. It is raw milk, produced under excellent sanitary conditions, and the finished bottle must have a count of ten thousand or less.

Q. Do you know of any other dairies other than the Chicago Guernsey Farms that sell such milk in the City of Chicago?

A. The Brook Hill Farms put out a certified milk.

The Master: Q. What is the difference between certified and pasteurized?

A. Certified milk is not pasteurized; it is raw milk and it comes from especially inspected cows; it has to be done according to rules and regulations of the American Medical Association.

Mr. Gariepy: I didn't hear the last.

610 A. It has to be done according to the rules and regulations of the American Medical Association.

The Master: Q. Is the bacterial count of certified milk higher than that of pasteurized milk?

A. No. It shouldn't be over ten thousand, and we permit as much as thirty thousand in the pasteurized bottle.

Q. How do you account for the higher bacterial count in the pasteurized milk?

A. We permit milk of two hundred thousand count to be used in the pasteurized bottle and the pasteurization removes a certain percent of that bacteria, but not all. In order for the finished bottle to have the thirty thousand count, or less, milk that comes in has to have two hundred thousand or less, that is, according to our Grade A Ordinance.

Q. Certified milk and pasteurized milk—the difference is that pasteurized milk is put through a pasteurization process, and certified milk is subject to rigid inspection as to sanitation and so on?

A. Yes.

Q. Would you say that pasteurized milk has a higher bacterial count, as a general rule, than certified milk?

A. As a general rule, no. We generally find
611 a good bottle of pasteurized milk with a ten thousand or less in a count.

Q. Without going into figures, I just want a comparison as to pasteurized milk having less bacterial count than certified milk.

A. It may, it doesn't always. It is variable.

The Master: Go ahead.

Mr. Gariepy: Q. Did you have occasion to check the milk in the year 1938 sold from Chicago Guernsey Farms in Chicago?

A. I could not divulge that information.

Q. Did you have occasion, yes or no?

A. Yes.

Q. Did you find the count high or low, or, rather, what was the count?

Mr. Schaefer: That is objected to.

A. I don't remember.

Mr. Gariepy: Q. Have you ever had occasion to visit the New York Experimental Station at Geneva?

A. Yes, sir.

Q. When was that?

A. December, 1938.

Q. Did you have occasion to take any work there, or to perform any tests there—either one?

A. I went up there for a conference with Dr. Breed.

612 Q. Concerning what?

A. Paper bottles.

Q. Was that when you were asked to make an investigation for and on behalf of these western suburbs last spring, in May?

A. It was shortly after that, yes, and we wanted to put in paper testing equipment in our own laboratory and I wanted to see what type of equipment was being used in laboratories doing that work.

Q. You saw the equipment there?

A. Yes.

Q. Did you have occasion to go to the Fulton Paper Company with regard to the making of caps on paper bottles?

A. Which bottles?

Q. Caps on glass bottles that are used?

A. Yes.

Q. Do you know what type of material these caps are made out of?

A. They are made out of virgin wood. They are made out of virgin wood at this particular plant.

The Master: Off the record. Can't you agree on that?
(Discussion off the record.)

Mr. Gariepy: It is stipulated by and between the
613 attorneys for the plaintiff and the defendants, that the City of Chicago at the present time permits the sale of milk of various dairies in glass containers, said glass containers being capped with paper caps which are made out of virgin spruce pulp, the same pulp, or the same material, as plaintiff's exhibit 2, Pure-Pak Container.

Mr. Schaefer: That is agreeable.

Mr. Gariepy: Q. Mrs. Koller, have you any interest in the outcome of this litigation?

A. No.

Q. Have you been paid any compensation with regard to these various tests you have performed, in making inquiry on the contents of the milk in the paper containers?

A. That is in my regular line of work, I am paid by the town or village checking up.

Q. Is your compensation measured as to whether you found one result or the other?

A. No.

Mr. Gariepy: That is all. Mr. Rall has some questions for the witness.

Direct Examination by Mr. Rall (Resumed).

614 Q. The counts you have referred to in giving the results of the tests of milk are as to the number of bacteria per cubic centimeter?

A. Yes.

Q. And that is the standard method of determining the number of bacteria, or giving the results of the number of bacteria found in the milk?

A. Yes.. That is in accordance with the latest edition of Standard Methods. It has changed, beginning the first of July, by the way.

Q. Were the methods you used in determining the number of bacteria per cubic centimeter in the milk, which you obtained from glass bottles, and which you obtained from paper containers, the standard methods used by public health officials in the United States for making that determination?

A. Yes.

Q. Do you know whether or not it is the same method as is prescribed by the Chicago Board of Health for the making of similar tests on liquid milk and cream in the City of Chicago?

A. I am quite sure it is.

Q. Have you an opinion as a bacteriologist whether or not the plaintiff's Pure-Pak Container, which is
615 identified here as plaintiff's exhibit 2, is a sanitary container for the sale of liquid milk and cream? Have you an opinion?

Mr. Schaefer: That is objected to.

A. Yes.

Mr. Rall: Q. Will you state what that opinion is?

Mr. Schaefer: That is objected to.

The Master: What is the ground of objection?

Mr. Schaefer: I object because the witness only shows some five or six—make it ten, if you will—rinse tests; that

is the extent of her work on the paper containers—five or six rinse tests, and the result of those plated out, and, now he asks her for an opinion.

Mr. Rall: Also she has made tests of the milk out of samples bought at random.

Mr. Schaefer: Five or six tests.

The Master: I sustain the objection.

Mr. Rall: I offer to show that the opinion of this witness is that plaintiff's exhibit 2 is a sanitary container for the sale of liquid milk at retail.

The Master: I will let you make a record on it. I think that is a conclusion for the Court, if it is one of the issues in this case.

616 Mr. Rall: There is no question about it being one of the issues.

The Master: And I think her opinion is based on or is largely based upon the reports which have been made by others to her. She said that she made no tests whatever of the paper itself.

Mr. Rall: The proof of the pudding is in the eating, if the tests that she made on the liquid milk and cream that came in these containers would indicate to her as a bacteriologist that these were proper containers.

The Master: I might be to her, but the City of Chicago might have much more rigid requirements. There are situations in the City of Chicago which might be radically different from those in other municipalities and there might be a very much more stringent and rigid requirement in the city. Some bacteriologist outside might think them sanitary and yet the official action of the City of Chicago might require a whole lot more rigid requirement.

Mr. Rall: I concede that any opinion that any witness expresses is not binding on the Court, but would depend the extent of the investigation made by the witness; the witness' training and lack of bias or prejudice. It seems to me that the opinion, at least, is admissible.

617 The Master: I sustain the objection, but you may make your record.

Mr. Rall: Q. Do many of the dairies which sell liquid milk and cream in the suburbs, for which you do laboratory work, also sell milk and cream from the same distributing points in the City of Chicago?

A. Suburban milk doesn't come into Chicago.

Q. Pardon?

A. Suburban milk doesn't come into Chicago, because their ordinance says that the plant must be located within the Chicago limits.

Q. You are referring now to the pasteurization plant?

A. That is right.

Q. So that the suburbs that you are interested in, or that you have done work in, do not have common pasteurization plants with the plants in the City of Chicago, with the milk that is distributed in the City of Chicago; is that correct?

A. The only thing we have in the suburbs are what they call receiving stations, that is, the milk comes in from farms and is transported, raw, to a Chicago plant; but no pasteurized milk goes in from the suburbs, to my knowledge, that is sold in the City of Chicago.

618 Q. Is milk sold in the suburbs that comes from a pasteurization plant in the City of Chicago?

A. Yes, a good deal of it.

Q. And those are the trucks that you referred to, from which you took your tests of milk coming into the suburbs from Chicago?

A. That is right.

The Master: Q. Do you know whether they came from Chicago in all instances?

A. A great many of them do, because they have the address on the truck, whatever plant it is from.

Mr. Schaefer: The witness has testified to no such tests—just so the Master will understand the record, the witness has testified to no such tests.

The Master: Well, she is testifying now.

Mr. Schaefer: I see.

The Master: Q. You say the addresses appeared on these trucks from which you bought the milk?

A. For instance, Wrightwood Dairy.

Q. Any other instances?

A. Yes—Bowman's and Bordens always have an address on them, too.

Mr. Rall: Q. In what methods are milk and cream distributed in the suburbs with which you are familiar?

619 A. They are distributed to the stores and distributed to the milk depots and distributed in retail routes.

Q. House to house?

A. Yes, house to house.

Q. State whether or not that differs from the method of distribution in the City of Chicago?

A. I don't believe it does.

Q. What are some of the pasteurization plants in the City of Chicago, if you know of any, from which milk is distributed to consumers in the City of Chicago and also to consumers in the suburbs, with which you are familiar?

Mr. Schaefer: The only objection that I would make is on the ground of materiality. It is not helping us go forward with the issues here.

Mr. Rall: There is a suggestion here that when you cross the city limits of the City of Chicago, you become a different kind of milk, or when you buy Borden's milk from one plant, if you buy it outside of the city limits it is a different sort of purchase.

The Master: Read the question.

(Pending question read by Reporter.)

(Discussion off the record.)

The Master: I will put the question this way:
620 Didn't you testify here a little while ago that in every instance where you bought milk from trucks in the suburbs, those trucks were selling milk that had been pasteurized in the City of Chicago?

A. Yes.

Mr. Rall: Q. And is milk from those plants also sold in the City of Chicago?

A. Yes.

Mr. Schaefer: If the Master please, that is not the testimony as I understand it, and it is not the fact.

Mr. Rall: That is what I was trying to show.

Mr. Schaefer: The tests that the witness has recounted here are, none of them, tests on milk which was pasteurized in a dairy operating under a permit issued by the City of Chicago. We have checked that by telephone. None of them are. The only testimony with respect to taking a bottle from the truck was with respect to Borden-Wieland's division at Forest Park, which plant does not have a City of Chicago permit, and milk pasteurized in that plant is not permitted to be sold in the City of Chicago.

However, I will stipulate to this fact:

That milk which is pasteurized in the City of Chicago is sold in the suburbs of Chicago.
621

Mr. Rall: And from the same source is sold within the City of Chicago?

Mr. Schaefer: Yes. Let me elaborate on that a little. My impression is and I am willing to stipulate that there are dairies in the City of Chicago which pasteurize milk, sell that milk in the City of Chicago, and also sell milk in the suburban communities.

Mr. Rall: That's right.

Mr. Schaefer: Is that what you mean?

Mr. Rall: Yes.

The Master: We will take a recess.

(Recess.)

The Master: Are you through with your questions?

Mr. Rall: I have one or two questions:

Q. Did any of the tests that you made on liquid milk or cream taken from paper containers show a larger number of bacteria per cubic centimeter than is permitted by the ordinances of the City of Chicago?

A. No.

Q. In addition to the Chicago address on these trucks, did they also have a permit number from the Board of Health of the City of Chicago?

A. Yes, they all carried a permit number.

622 Mr. Rall: That is all.

The Master: Cross-examine.

Cross-Examination by Mr. Schaefer.

Q. In your direct examination, Mrs. Koller, you testified as to certain tests which were made on samples from the Borden-Wieland Dairy, which were submitted November 29, 1938 and concerning which you reported on December 2, 1938. The tests which you made at that time on those samples were all tests on paper containers, were they not?

A. Yes.

Q. And you also testified on your direct examination as to a report which you made on samples purchased from the Bowman Dairy, February 21, 1939, concerning which you reported under date of February 23, 1939. You testified that one of those samples was a paper container which was purchased at an A & P store.

A. Yes.

Q. In what municipality was that purchased?

A. West Chicago, I believe. Is that the one? You can tell who that report is made out to.

(Mr. Schaefer hands paper to the witness.) Yes, that is West Chicago.

623 Q. You reported at that same time on a test which you made on a quart glass bottle taken from truck No. 1665. What was the City of Chicago Permit number of that truck?

A. I don't know. You see, before we let this Bowman and Borden milk go into the suburbs we would get a letter from Dr. Bundesen stating that it was under his supervision, and I have those letters on file at the laboratory. So, we take it from that, that whatever they sent out, they have a Chicago permit. I have noticed that most of those trucks have a number on the side.

Q. Where was the milk, which you tested from the paper container, pasteurized?

A. I presume that would have to be—

Q. Do you know?

A. No, I don't know. I know it would be out of Chicago.

Q. Do you know where the milk, which was contained in the glass bottle, was pasteurized?

A. No, I don't know. I have no way of knowing.

Q. Do you know whether the milk in the two bottles was pasteurized on the same days?

A. Only from the date on the cap.

624 Q. Do you know whether that was pasteurized on the same day?

A. No, I don't know. I presume they would put the right dates on it.

Q. Do you know whether they were pasteurized on the same day?

A. No, I don't know.

Q. All of the tests which you have made with respect to bacterial count of paper containers have been rinse tests, have they not?

A. Well, all that we have on there, yes.

Q. Have you made any others?

A. I did some just for my own observations, but I didn't make any report to any one on them.

Q. Those concerning which you testified this morning have been—

A. Request tests.

Q. All of them rinse tests?

A. Yes.

Q. At whose request did you make those tests?

A. The different health officers, whatever health officer's name appears on the top of the report.

Q. When were you first employed by the Fieldcrest Dairies, Incorporated?

A. I don't know that I am employed by them.

625 Mr. Gariepy: She did not say she was employed by them, on direct.

Mr. Schaefer: Maybe she will say it now.

Mr. Gariepy: She just said she didn't know as she was.

Mr. Schaefer: Q. Are you employed by the Fieldcrest Dairies, Incorporated?

A. I think twice in the time we have been in business we have done some work for them direct.

Q. When was that?

A. Once was in regard to an ice-cream plant. It had nothing to do with the milk.

Q. When was that?

A. Last year some time.

Q. Some time in 1938, do you mean?

A. 1938.

Q. What compensation did you receive at that time?

A. I sent them a bill for whatever time I put on it. I made a trip up to Pearl City Ice-Cream Plant.

Q. What compensation did you receive?

A. I don't remember exactly. I would have to look at the books. It was for time and material and labor basis.

Q. You have no idea at the present time as to
626 what your compensation was?

A. I know it was less than seventy-five dollars. I don't know exactly what it was.

Q. What other work have you done for the Fieldcrest Dairies, Incorporated?

A. Off hand, I don't remember any.

Q. You mentioned "twice"?

A. I think twice, but I don't remember what the other time was now. I will bring in the ledger, if you want to see it.

Q. Were you ever employed by the Dean Milk Companies, any of them?

A. I was referring to Fieldcrest and Dean as the same. I don't know that they are.

Q. Did you ever receive any money for compensation for any work which you did with respect to the Pure-Pak Containers?

A. Not a nickel, no, sir.

Q. You did not?

A. No, sir.

Q. What work have you done with respect to those containers?

A. Well, I did about three months of reading of everything that I could get, and I made up a report 627 for Dr. Watson of the Glen Ellyn Health Department, but I did that because I was paid by the town. I was not paid by Dean.

The Master: For whom did you make this trip east to have this conversation with Dr. Breed?

A. Myself—for the laboratory.

Q. What?

A. I did that at my own expense, for the laboratory.

Q. Didn't anybody pay you back your expenses?

A. No. That was because we wanted to put in paper testing equipment and I wanted to see what they were using up there. It was really a personal trip.

Mr. Schaefer: That is all.

The Master: Did I understand you to say you were a bacteriologist?

A. Yes.

Redirect Examination by Mr. Gariepy.

Q. How long have you been such?

A. Well, I started my bacteriological work with Dr. Maximow in 1926, I believe it was. I worked with him from 1926 to 1928 and he died.

Q. Where else did you do bacteriological work than with him?

A. I studied T. B. with Dr. Sweeney at the Tuberculosis Sanitarium.

Q. How long?

A. I went out there three days a week for a long time, to get experience.

Q. How long?

A. Between one and two years.

Q. Then where else did you do bacteriological work?

A. At the Washington Park Hospital.

Q. How long were you there?

A. I think about six months. I went in there to study venereal diseases.

Q. After your service at the Washington Park Hospital, where did you go?

A. I did that part time. We had our own laboratory, I thought the more I could see of the things I wanted to know, the better it would be in our own laboratory.

Q. Mr. Schaefer asked you concerning compensation from Dean or from Fieldcrest. Have you ever been promised any compensation from Dean or Fieldcrest relating to the matters under inquiry now, today, that is as to paper containers or counts?

A. No.

Q. You have no agreement for any?

A. No, sir.

629 Q. No agreement of any kind?

A. No, sir.

Mr. Gariepy: That is all.

Mr. Schaefer: No further questions.

The Master: You are excused.

(Witness excused.)

PAUL HUBERT TRACY, called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. Please state your name, Doctor.

A. Paul Hubert Tracy.

Q. Your address?

A. 409 Delaware, Urbana, Illinois.

Q. What is your business or occupation?

A. I am Professor of Dairy Manufactures.

Q. How long have you been such?

A. I have been connected with the University of Illinois since 1920.

Q. What positions have you held with the University of Illinois since 1920?

A. I started as an Assistant Dairy Manufacturer. My rank has increased until at the present time I am a full Professor. At the present time I am in charge of the
630 Division of Dairy Manufactures, in charge of the teaching of a course in Market Milk; a course in Condensed Milk manufacture; a course in Ice-Cream Manufacture; a course in Milk Product Judging; a course in Dairy Plant Management; advanced undergraduate course in Dairy

Manufactures; graduate course in Dairy Manufactures; research work in Dairy Manufactures. I have the management of the University Creamery. That about takes it all in.

Q. What college degrees do you hold and when and where were they received?

A. B. S., 1920—University of Illinois; M. S., 1922, the same institution; Ph. D., 1930.

Q. What are your duties and responsibilities in these various positions you hold at the University?

A. Those have been pretty well outlined above: teaching and research work and creamery management.

Q. Are you a member of any honorary societies at the University, scientific societies?

A. Yes.

Q. How many?

A. Alpha Zeta, that is an honorary undergraduate fraternity. Gamma Sigma Delta, honorary society of Agriculture. Phi Kappa Phi, all-University honorary society.

Sigma Xi, scientific honorary society. That is all of 631 them.

Q. What types of research have you conducted?

A. Research work on ice-cream, condensed milk, market milk, the various phases of the manufacturing problems relating to the manufacturing and distributing of these products. Also consumer studies, and sanitary problems connected therewith.

Q. Have you published any scientific articles on this research work?

A. I have.

Q. How many?

A. Approximately one hundred, I guess.

Q. Have you made a scientific and laboratory analysis of the study of the sanitary aspects of the paper milk containers?

A. Dr. Prucha, who is head of the Department of Dairy Bacteriology—he and I have a joint study of the single service paper milk containers.

Q. How long have you had that?

A. It started along in February, 1937, I believe.

Q. What types of paper containers have you studied?

A. We have studied the type of container which is prefabricated and which requires a special machine for filling, an example of which is the American Can. We have

studied also the type of container which is pre-fabricated and which makes use of the regular glass milk bottle filling machine, as exemplified by the Seal Rite. We have studied the type of bottle which is formed, paraffined, filled and sealed in the plant itself, that is the dairy plant, as exemplified by the Pure-Pak.

Q. Pure-Pak, referring to plaintiff's exhibit 2, standing before you?

A. That is right.

Q. Have you had occasion to visit the mill where the pulp was made, in connection with the Pure-Pak?

A. We have visited the mill at Cherry River, West Virginia, which, I believe is the mill where the paper for the Pure-Pak bottle is put out, or made, as used by Dean.

Q. Have you studied the sanitary quality of the paper in the paper containers?

A. As I mentioned before, Dr. Prucha and I have a joint project on this subject, and together we have studied the sanitary aspects of the paper-making and of the paper containers before and after being paraffined, and the milk itself after being put into the paper container, and the sanitary aspect of the paraffining process, also the study of the practicability of paper containers, and plant operations and the consumer reaction towards that container.

Q. In connection with the Dairy Husbandry Department of the University of Illinois, is there a small dairy there operated?

A. We have a commercial operation in our experimental laboratory for the purpose of making our teaching and our research more practical.

Q. Approximately how many quarts of milk are bottled there daily and sold?

A. Approximately five hundred quarts.

Q. What are the milk products that are manufactured and sold by the University Creamery?

A. We manufacture and sell: butter, cream, chocolate milk, cultured milk, ice-cream, ice-cream mix, evaporated milk, concentrated milk, sweet condensed milk, cottage cheese, neufchatel and piminto cheese.

Q. Have you experimented with the paper—

A. I haven't finished.

Q. Continue.

A. Muenster cheese, cheddar cheese, sterilized evaporated milk, honey cream. That is about all.

Q. In connection with your work in the Dairy Husbandry Department, have you performed certain experiments with paper milk containers with regard to their being a container for use in delivering milk?

634 A. Yes, we have. We have used the single service paper container in our commercial set-up, which forms the basis also of our experimental studies.

Q. Since when has that been done?

A. About March, 1937.

Q. How much milk of the approximate five hundred quarts was delivered in paper containers from the University Creamery?

A. One hundred per cent.

Q. Does the dairy supply any paper containers?

A. The Creamery?

Q. Does the Creamery supply any paper containers to the University Hospital?

A. We supply retail consumers and the homes in Champaign and Urbana, the University Hospital and the University dormitories and our sales room.

Q. What types of containers do you use there, Doctor?

A. Do you mean what type of paper containers?

Q. Yes.

A. Those three that I mentioned previously, Seal Rite, Pure-Pak and American Can.

Q. That has been going on for how long a period of time?

A. Pretty regularly since March, 1937. Of course, intermittently we would go back to glass for a short time and then return again to paper. The idea was to enable us 635 to set down the consumer reaction of the housewife towards the type of milk container she was being served with.

Q. What research work did you do in connection with the use of the paper container, especially the Pure-Pak?

A. Well, I mentioned going to the mill to study the source of the paper.

Q. Outside of that, Doctor?

A. We studied the conditions under which the container was printed.

The Master: Who studied that? You say "We".

A. We observed it.

The Master: Q. Tell us what you did, now; not what "we" did.

A. I am part of "we".

Q. Who is the other part of "we"?

A. Dr. Prucha.

Q. In order to save time later on, on cross-examination, try to distinguish between what you did and what Dr. Prucha did?

A. What I did?

Q. Yes, tell us what you did, and then when Dr. Prucha did something in these experiments, you just distinguish that.

A. It is going to be a little difficult, because so 636 many things we did together, you see.

Mr. Gariepy: If you did a part of it, you just tell us what you did.

The Master: Yes.

The Witness: Shall I proceed?

Mr. Gariepy: Yes.

The Witness: Well, I still think it is incorrect to say "I", because many of these things, one man may do one part of it and the other man may do the other part, and I couldn't say except we, both, got our result; we checked the sanitary condition of several hundreds of the Pure-Pak Containers before and after paraffining.

I checked certain of the physical aspects of the paper container, for example, water absorption, bulging, consumer acceptance.

Mr. Gariepy: Q. What did you observe upon your trip to the Cherry River Paper Company's Mill, especially with regard to sanitary conditions?

A. We went all over the mill, from the logs to the finished paper and we took samples.

The Master: Q. Is that you and Dr. Prucha?

A. Dr. Prucha and I, we took samples of the pulp of the different steps in the different processes of making the paper, as well as the completed paper itself.

637 We took samples of the water that they use for treating the pulp, as you understand, in paper making, they use a tremendous amount of water. We took samples of the water before and after it was chlorinated.

These samples were taken with us back to our laboratory at Urbana and we arrived there on a Sunday afternoon and I worked Sunday afternoon plating these out.

Mr. Gariepy: Q. What other things did you observe at the Cherry River Paper Company Mill with regard to sanitary conditions there, other than checking of the water?

A. Seeing the fact that the pulp was put into the water and was sterilized, we simply familiarized ourselves with the method of making paper as practiced in this plant, and took those samples.

Q. What did you find with regard to the sanitary conditions being employed; or unsanitary conditions, from your observations there?

A. Of course, we did not have a yardstick to measure sanitary conditions in a paper mill. We don't have a yardstick to measure sanitary conditions in a paper mill, as yet. We have no standard set-up, but the results of our tests would indicate that their methods were sanitary.

638 The paper was quite low in bacteria. The water that they used showed no B-coli bacteria, that is, the water that they used, after being chlorinated, showed no B-coli, and the finished paper itself was very low in count.

Q. From there you went to the Gardner-Richardson Mill?

A. No, I never was at the Gardner-Richardson Mill.

Q. What did you observe about printing the container?

The Master: Where?

A. I did not go to the Gardner-Richardson Mill.

Mr. Garipey: Q. You did not take a trip there?

A. I went to the Chicago Paper Company.

Q. Did you perform any tests with regard to the subject matter of leakage in these Pure-Pak Containers?

A. Only from the standpoint of observation; we observed them for leakage.

Q. For how long a period of time?

A. I observed for leakage.

Q. Tell what you observed?

The Master: Where was this you did your observing?

A. At the filler, at the machine, where the bottles were filled.

The Master: Where was this?

A. In my laboratory in the Dairy Manufactures Building.

639 Mr. Schaefer: Q. Do you mean in your laboratory, Doctor?

A. Yes, the commercial unit of the laboratory. This filling machine is in the commercial plant—not up in the laboratory.

Mr. Garipey: Q. Were these several hundred containers that you tested, that you testified to, taken from that machine, Doctor?

A. That is right.

Q. What did your tests show with regard to bacteria count on the several hundred containers that were not paraffined?

A. Do you want a specific answer on that?

Q. Yes.

A. Then I will have to refer to my notes.

Q. You don't have it, off hand?

A. As I remember it, the highest was about 18 to 20 bacteria per bottle.

Q. And the lowest?

A. Well, several of them showed no growth on the plates, indicating sterile condition of the bottle.

Mr. Schaefer: So that we can straighten it out now, I will ask the Doctor one question:

Q. Those are rinse tests, Doctor?

A. Those are rinse tests, yes, sir.

640 Mr. Gariepy: Q. These were rinse tests?

A. Yes.

The Master: Aren't these the figures that have been obtained as a result of Dr. Prucha's tests?

Mr. Gariepy: Dr. Prucha's tests, Master; Dr. Prucha dictated it, which is the only stipulation between the counsel for the plaintiff and for the defendants; it is the result under the technique and the procedure as outlined by Dr. Arnold. It is nothing with regard to these tests at all.

Mr. Schaefer: Let's have the question read.

(Question read by the Reporter, viz:

"Q. Were these several hundred containers that you tested, that you testified to, taken from that machine, Doctor?"

Answer read:

"A. That is right."

Question read:

"Q. What did your tests show with regard to bacteria count on the several hundred containers that were not paraffined?"

A. That were not paraffined?

Mr. Gariepy: Q. That is right, Doctor.

A. I haven't the counts on that, unparaffined.

Q. How many have you counts on that are unparaffined?

641 A. 128.

Q. What did those counts show?

A. These tests were 100 c. c. rinse tests. 100 c. c. of sterile water was placed in each quart bottle.

The first 25 showed no growth.

The next 35 showed one colony on each duplicate plate.

The next 6 showed no growth on one plate, and two on the other plate.

Do you want me to go into this in detail, like this?

Q. That is close enough. You are giving them in groups there.

A. The next 13 showed one colony on one plate, and two on the other.

The next 4 showed no growth on one plate and three on the other.

The next 4 showed two on one plate and two on the other.

The Master: Do you want to go through all of these?

Mr. Gariepy: Q. What is the sum and substance of them, Doctor?

A. They keep getting larger.

Mr. Schaefer: Then, let's keep going.

Mr. Gariepy: Q. Proceed, Doctor.

642 A. One showed one on one plate, and three on the other.

The next 3 showed none on one plate and four on the other.

The next 6 showed two on one plate and three on the other.

The next one showed one on one plate and four on the other.

The next one showed three on one plate and three on the other.

The next 2 showed two on one plate and four on the other.

The next 2 showed one on one plate and five on the other.

The next 2 showed three on one plate and four on the other.

One showed three on one plate and five on the other.

One showed two on one plate and six on the other.

The next 4 showed four on one plate and five on the other.

One showed five on one plate and five on the other.

Two showed four on one plate and six on the other.

643 One showed three on one plate and seven on the other.

Three showed five on one plate and eight on the other.

One showed eight on one plate and eight on the other.
One showed eight on one plate and nine on the other.
One showed eight on one plate and ten on the other.
One showed nine on one plate and ten on the other.
One showed nine on one plate and eleven on the other.
One showed nine on one plate and thirteen on the other.
One showed eleven on one plate and fifteen on the other.
One showed thirteen on one plate and fifteen on the other.

One showed seventeen on one plate and nineteen on the other.

They should add up to 128. I don't know whether it does or not.

Q. Were these on the Pure-Pak Containers?

644 A. That's right.

The Master: Q. Unparaffined?

A. That's right.

Mr. Gariepy: Q. What is the Public Health Standard on bacteria per quart unfilled glass bottles?

A. U. S. Public Health Standard?

Q. Yes?

A. One per c. c. of capacity?

Q. How much capacity is in the quart bottle?

A. A little less than 950.

The Master: Q. 950—what?

A. C. c.

Q. 950 c. c.

A. Per quart.

Q. How many would that be in a quart, you say?

A. 950.

Mr. Gariepy: Q. Did you perform any tests with regard to paraffine dissolving in the milk?

A. I tried to determine the temperature at which the paraffine would melt and possibly pass into the milk, by setting empty containers in incubators at different temperatures, to determine at what temperatures the paraffin melted sufficiently to pass off on an unwaxed paper, soaked up by the paper, you see. That temperature, with 125 degrees melting point, was 120.

645 The Master: Q. What is the 120?

A. That is the temperature at which the paraffin on these containers melted sufficiently to make a smudge.

Q. To make a smudge?

A. To make a smudge on the paper.

Mr. Gariepy: Q. That is Fahrenheit?

A. Yes, sir.

The Master: Q. What is the 125?

A. The so-called rating or melting point of the paraffin used for treating that container.

Q. You said "125" and "120"?

A. This particular container was paraffined with the 125-degree melting point paraffin; but at 120 degrees the paraffin began to melt sufficiently to pass off into the container. In other words, 5 degrees below the rating for melting.

Q. Let's put this question: You say at 120 the paraffin would make a smudge on the paper?

A. Yes.

Q. It is more difficult for paraffin to get into paper than for paraffin to get off of paper, isn't it, after it is once on?

A. No, I wouldn't think so.

Q. What would you say would be the temperature 646 at which some of the paraffin might come off of the paper after it is once on?

A. That is what I gave you, 120 degrees.

Q. I thought you were giving us the temperature at which it would get into the paper.

A. No—the temperature at which paraffin was applied was 170 degrees, approximately; that is, this empty container was dipped in paraffin at 170 degrees and then the containers after being so treated, were put in incubators at different temperatures, to see at what point paraffin on this container would break away and make a smudge on the paper on which it was placed.

Q. Smudge on the paper on which the paraffin had actually passed?

A. It was on a piece of paper put in an incubator.

Q. The smudge was not on the paper constituting the container, but on another piece of paper?

A. That is right, on the piece of paper.

Q. Wouldn't there be some paraffin come off at 100 degrees without making an actual smudge that you could perceive?

A. I don't believe so, unless you applied friction at some point. Of course, you can take paraffin off at any temperature with friction, but I don't think it would 647 melt and pass into the milk until it was—say—this particular paraffin, 120 degrees.

Q. Let's assume milk is being shaken in this container, as, we will say, a delivery wagon is bouncing over the cobblestone pavement, there is a certain amount of friction as this milk is being shaken up in a bottle; wouldn't some of the paraffin get into the milk, short of 120 degrees?

A. All I can give you is my opinion. I don't think it would, that sort of friction—that is a rolling action, you might say, on the inside. What I meant was some sharp instrument.

Q. A rolling action of the waves on the sand does a whole lot with the sand.

A. That is true, but the only thing I think that would cause any trouble there in that respect would be in case there was a little piece of paraffin in some corner, larger than it should have been, that might break off and get into the milk.

Mr. Gariepy: Q. Doctor, do you know anything about the chemistry of paraffin and its contents?

A. No, I don't.

Q. Do you know the uses of paraffin in food products?

A. The use of paraffin in food products?

648 Q. Yes.

A. Well, I can draw, possibly, only on my boyhood experiences in that respect, the uses my mother made of it.

Q. What use is being made of it today, getting down to modern times.

The Master: We don't want to go that far back.

Mr. Gariepy: Q. That is too far.

A. Well, it is being used in treating a good many food containers.

Q. Name them.

A. All types of waxed papers.

Q. Cheese containers?

A. Cheese, yes. I would say mostly, cheese boxes, butter boxes, milk bottle caps; there is not much, not very much, paraffin on the milk bottle caps, though; drinking cups, that is paper drinking cups.

Q. Jellies and canned goods?

A. Commercially?

Q. Yes.

A. I don't know whether commercial plants use much paraffin on jellies or not, but our mothers do.

Q. That is home canning?

A. Yes.

Q. It was used in home canning?

649 A. Home canning, yes.

Q. What else?

A. Well, they used to make a chewing gum out of it. I don't know whether they do now or not.

Q. How about soda fountain straws?

A. I couldn't say whether they are paraffined or are not paraffined.

Mr. Gariepy: Could we stop now for lunch, Master? It is 12:30.

The Master: We can not finish with this witness, any way. Suppose we come back at 1:45, so that we can finish with this witness and the other witness.

Mr. Gariepy: I sent the other witness away.

The Master: We will recess until 1:45 p. m.

(Thereupon, recess was taken until 1:45 o'clock, p. m. on the same day, July 5, 1939.)

650 • • (Caption) • •

U. S. Court House,
Wednesday, July 5, 1939,
1:45 o'clock p. m.

Met pursuant to recess.

Present: Same as before.

651 The Master: You may proceed.

PAUL HUBERT TRACY, a witness called on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Direct Examination (Continued) by Mr. Gariepy.

Q. Doctor, have you performed tests in the matter of bacteria count found in the paraffined container?

A. We have.

Q. Have you a report of those tests and that research?

A. I have here—

The Master: What kind of a research is that?

Mr. Schaefer: Off the record just a minute.

(Discussion off the record.)

The Master: Q. Was that a rinse test?

A. Rinse test.

The Master: Is that sufficient, Mr. Schaefer?

Mr. Schaefer: Yes.

Mr. Gariepy: Q. When were these performed?

A. When were they performed?

Q. Yes, Doctor.

A. I can't tell you the exact date, but it is—

Q. Between what dates?

A. It was either late 1937 or early 1938.

652 Q. At the University of Illinois laboratory?

A. Yes.

Q. Your laboratory, as you put it?

A. Yes.

Q. And how many containers did you perform these tests on?

A. We checked first 132 Pure-Pak containers that were paraffined in our plant. They were from eleven different milk plants. That is, the blanks were printed up for eleven commercial dairies and they were sent to us and we formed them, paraffined them, and checked them for sanitary conditions.

Q. Did you paraffin them on the machine of which you had pictures here this morning, which is the same machine as shown in Exhibit 15-A? Mr. Schaefer, have you seen those pictures yet?

A. I don't remember what Exhibit 15-A is.

Q. That is a picture of the machine, showing the different sections of it.

Mr. Gariepy: You saw this, Mr. Schaefer?

The Master: It is the regular commercial—

The Witness: It is a Pure-Pak machine.

The Master: It is a Pure-Pak machine?

The Witness: It is the one we had installed in our laboratory.

653 Mr. Gariepy: Q. This picture that you got, No. 2, general view of Pure-Pak machine from front end, is that the same machine as at Chemung, Illinois, in the Fieldcrest Dairy plant?

A. I couldn't say whether it is the same or not.

Q. Is it the same type?

A. It is similar to it.

Q. Did you give the results of these tests upon the paraffined containers, Doctor?

A. No, sir.

Q. Will you give that?

A. The 132 containers showed the following results:

Forty-three showed no colonies on duplicate plates.

Forty showed no colonies on one plate, but one colony on the other plate.

Twenty-four showed one colony on each plate.

Eleven showed one colony on one plate and two colonies on the other plate.

Four showed two colonies on one plate and two colonies on the other plate.

Three showed two colonies on one plate and three colonies on the other plate.

One showed three colonies on one plate and four colonies on the other plate.

654 One showed nine colonies on one plate and fourteen colonies on the other plate.

And I have data here on three hundred and ninety-five Pure-Pak containers, which were the ones we were using for our own milk supplies.

Q. At Champaign?

A. At Champaign, under the same conditions as the others were studied.

Q. And the sum total, in substance, averaging the bacteria counts on those is what? Just how would you describe the test that you performed on those three hundred and ninety-five, Doctor?

A. These tests were similar to the ones referred to above, that is, they were rinse tests.

Mr. Schaefer: Q. Paraffined by you?

A. By us.

The Master: Q. You participated in them yourself?

A. Yes, sir.

Mr. Gariepy: Q. What did they show, Doctor?

A. Ninety-six showed no colonies on either plate.

One hundred and ten showed no colonies on one plate and one on the other.

Seventy-six showed one colony on one plate and one on the other.

Fifty-six showed one colony on one plate and two 655 on the other.

Thirty-three showed two colonies on one plate and two on the other.

Thirteen showed three colonies on one plate and four on the other.

One showed four colonies on one plate and four on the other.

Three showed four colonies on one plate and five on the other.

One showed five colonies on one plate and five on the other.

Three showed five colonies on one plate and six on the other.

One showed seven colonies on one plate and eight on the other.

One showed ten colonies on one plate and eleven on the other.

One showed twenty colonies on one plate and twenty-one on the other.

Q. Doctor, do the results that you have obtained in the performance of these tests show that they are well within the range of acceptability concerning bacteria counts allowed on a milk bottle?

Mr. Schaefer: That is objected to.

656 The Master: I will sustain the objection.

Mr. Gariepy: Q. What is the count of acceptability allowed for bacteria per quart on a milk bottle?

A. You mean in the city of Chicago?

Q. Yes.

A. I understand it is one per cc.

Q. That is 946 per quart?

A. Yes.

Q. And are these figures within the realm of 946 per quart?

Mr. Schaefer: That is objected to.

The Master: Within the what? The realm?

Mr. Gariepy: Within that scope, that limitation.

The Master: It shows on the face of it what it is.

Mr. Schaefer: It shows on the face of it that no comparison is possible.

The Master: Why not?

Mr. Schaefer: On a comparison of that type. You have here a rinse test.

The Master: What?

Mr. Schaefer: What you have here is a rinse test.

The Master: Yes.

Mr. Schaefer: Which the former testimony has indicated will not show a complete number of the bacteria present in the container. That is, you will get the same number again on successive tests—that is Sanborn's testimony—running up to ten, ten tests, and he said from
657 ten on the number he found would begin to drop off.

In the first place, you have no standard for the number of bacteria in a paper container. That is Sanborn's testimony.

The Master: He has testified now as to how many bacteria there were. You might put another question, Mr. Gariepy, if you wish.

Mr. Gariepy: Q. Doctor, what tests are usually employed by bacteriologists in ascertaining the number of bacteria counts in a glass milk bottle?

A. Rinse tests.

Q. That is the same test you employed on the paper?

A. That is right.

Q. Is there any other test usually employed to ascertain accurately the amount of bacteria count?

A. In a glass bottle?

Q. Yes.

A. The standard method calls for the rinse test.

Mr. Schaefer: I can shorten it if I could ask him about the paper now.

Mr. Gariepy: Surely, you can ask him about the paper now, if you want to.

Mr. Schaefer: Why don't you ask him the 658 parative question about paper?

Mr. Gariepy: Q. Is the rinse test the test usually employed in finding the bacteria count in a paper bottle?

A. It is one test that has been used. We use three different tests.

Q. And what are the three different tests that you employ?

A. We use the standard procedure for glass bottles, which is the method used in describing these results.

The Master: Q. The rinse test?

A. The rinse test. Then we use one method where we added 10 cc. of water, sterile water, to the bottle, and then tried to recover as much of that as we possibly could, dividing it between different plates.

The third one is by adding melted agar directly to the bottle, incubating the bottle with the agar in it in an incubator, and then cutting the bottle off, removing the agar carefully, so as not to break it, and then counting the bacteria growing in that agar disk.

Mr. Gariepy: Q. Are those considered safe and acceptable tests by bacteriologists?

A. Well, we did this work primarily to compare the

659 different methods, and the methods are used by bacteriologists in checking on the sterility or the sanitary condition of different pieces of equipment. The agar-disk method is used for determining the sanitary condition of churns, by pouring the agar right on the given surface of a churn, until it solidifies, and then lifting it off carefully and incubating that, to see what bacteria were attached to the agar. A churn is one of those things difficult to check upon, and that method has been used for that purpose.

Q. All those three methods are employed usually in testing bacteria count on glass milk bottles?

A. No.

Q. Which test alone is used?

A. The rinse test. That is the standard procedure for glass bottles.

Q. Are you acquainted with the methods employed in the city of Chicago at dairies for sterilizing glass milk bottles?

A. To this extent; that I have visited dairies in Chicago and I have also familiarized myself with the Kelly ordinance, which specifies the procedure under which glass bottles in Chicago must be treated.

Q. And what is the method employed in the city of Chicago for sterilizing glass bottles?

660 A. Well, there are different methods, depending on the type of bottle washer that is used. In all cases the bottle, after being washed with alkali water, must be sterilized by hot water, steam or chlorine. The larger plants, of course, use the soaker type of washer, which facilitates those operations from a mechanical point of view, eliminating the human element to a certain extent, and I believe they require that the soaker solution—

Mr. Schaefer: Now, just a minute. I would like to know what question the witness is answering.

Mr. Gariepy: If he is acquainted with the methods employed in the city of Chicago at the present time for sterilizing glass milk bottles.

Mr. Schaefer: Let us have the question.

The Master: Read the question and answer.

(The record was read by the reporter as above recorded.)

Mr. Gariepy: Q. Go ahead, Doctor, from where you were stopped.

A. (Continuing.) —have a minimum temperature of 120 degrees F., have a minimum NaOH content, that is sodium hydroxide, of 1.6 per cent, and the rinse bottles be

treated with a minimum chlorine content of fifty parts per million. That is essentially the method. Of course, 661 those are not the details.

Q. Do you know how often the alkali solution is tested and renewed?

A. I think the requirement is once a day and renewal once every two weeks, at least once every two weeks.

Q. In the case of the glass bottle as used in the dairies in the city of Chicago that are not used immediately after the sterilization process, do you know what they do with them?

A. They are required to be kept in a bottle case, inverted, in a place which is not subject to contamination from dust, flies, insects, splash water.

Q. Are there any hazards that are attendant upon the sterilization process that you have just outlined in here, that you have observed, health hazards?

Mr. Schaefer: That is objected to.

The Master: Let him answer.

The Witness: A. As I understand the question, it is: Are there any possible health hazards connected with the operation of the class of bottle washing as practiced in the city of Chicago?

Mr. Gariepy: Q. That is right. As you saw it and observed it.

A. I would say there are these possibilities. The NaOH, sodium hydroxide, content, the solution in the soaker 662 bottle washer, is not always up to the required strength.

The Master: Q. Have you ever observed it as never being up to the required strength?

A. In the city of Chicago?

Q. Yes.

A. I never have.

Q. Then why do you say it is not always up to the required strength?

A. He asked me to comment upon these operations that I have observed in the city of Chicago, from the standpoint of possible hazards from a health angle.

Mr. Gariepy: That is right.

The Master: Possible? I suppose if they did not do it at all, that would be possible too, wouldn't it?

The Witness: That is right.

The Master: Confine yourself to what you think your

observation has shown. Of course, if they do not do it, there is a health hazard.

The Witness: Well, I would take your question to be different from the one asked me. Do you mean the practices I have observed, Mr. Gariepy?

Mr. Gariepy: Q. Yes.

A. Or the health hazards?

Q. The health hazards you have observed existing in the sterilization process employed in the city of Chicago on washing glass milk bottles.

A. If you mean, have I observed any discrepancies on the washing of glass milk bottles in the city of Chicago, I would say no.

Q. The health hazards that are attendant upon the procedures as you know them and as you have observed them are what I refer to.

A. Let me get this straight. I have not seen any discrepancies in the washing of bottles in the city of Chicago, but from my knowledge of the methods I can tell you some of the possible hazards connected with that process. Now, which question am I asked?

Q. Answer the latter question.

Mr. Schaefer: The latter question is objected to.

The Master: It calls for speculation, of course, that the procedure will not be carried out, but I will let him answer. Let us see what are the frailties and weaknesses of this test, in his opinion.

The Witness: A. I have already mentioned the possibility of the strength of the sodium hydroxide solution, commonly referred to as the soaker solution, not being up to standard. The possibility of the spray nozzles being clogged, so the bottles are not being properly rinsed, particularly in the case of the chlorine rinse. The possibility that the chlorine solution is not up to the required standard strength. The possibility that the bottles become contaminated after they have left the washer and before they are filled with milk.

Mr. Gariepy: Q. That is, while being stored?

A. While being stored, or even while passing from the washer, in the case of the soaker washer, directly to the filler.

Q. Have you in your experience, Doctor, ever encountered or do you know, as a bacteriologist, of any such thing as a sterile milk bottle?

A. A sterile milk bottle?

Q. Yes.

A. We have in our examination found bottles that gave no count, which from a bacteriological point of view would be considered sterile.

Q. Have you performed certain experiments with regard to glass bottles at the university creamery, where the soaker type of bottle washer is used, following the methods employed in the city of Chicago, as you have outlined?

A. We have a soaker type bottle washer, which is operated essentially on the standards of the city of Chicago, and it is part of our routine practice to check six bottles from this washer every day, from a sanitary point of view.

665 Q. Have you checked them for a period of twenty-seven days?

A. Yes.

Q. And what did that check show with regard to the matter of sterility or bacteria count per hundred cubic centimeters?

Mr. Schaefer: That is objected to.

The Master: I will let him answer.

Mr. Schaefer: We are getting pretty far afield here, Master.

The Master: I will let him go on for a while and see what he has got in mind.

The Witness: A. Ninety-seven bottles showed no count, no bacteria on the plate.

Thirty-five bottles—these are quart bottles—showed a count of 100 bacteria per bottle.

Thirteen bottles showed a count of 200 bacteria per bottle.

Nine bottles showed a count of 300 bacteria per bottle.

Four bottles showed a count of 400 bacteria per bottle.

One bottle showed a count of 500 bacteria per bottle.

Three bottles showed a count of 600 bacteria per quart bottle.

666 Mr. Schaefer: What was that last, again?

The Witness: I said that three showed a count of 600.

Mr. Gariepy: Q. Doctor, have you had occasion to become acquainted with certain bacteria known as fly pupae?

A. There is not a bacteria called that. There is an insect.

Q. Have you had occasion to find that insect in performing certain experiments?

A. No, I have not. I have noticed reports upon it in the literature.

Q. Have you had occasion to find any such insects in milk containers?

A. I have not.

Q. Would it be possible for said insects or bacteria to be found in the glass bottle after it had been sterilized by the methods employed, as you just described here, that is, found on the inside of the bottle?

Mr. Schaefer: That is objected to.

The Master: Will you read that question, please?

(Mr. Gariepy's last question was read by the reporter as above recorded.)

The Master: I will sustain the objection. I suppose anything would be possible.

Mr. Gariepy: Q. Doctor, are you familiar with the so-called glass bottle milk caps that we had out here this 667 morning? Have you seen those red caps?

A. Yes.

Q. Have you performed certain tests to ascertain the matter of sterility or unsterility of said caps?

A. No, I have not.

Q. Do you know anything about this matter of the caps being leak-proof or not, these milk bottle caps that you saw used here this morning, or exhibited?

A. Leak-proof?

Q. Yes.

A. I can answer that only from the standpoint of our own experience with that type of cap.

Q. All right, what is your experience with that type of cap?

A. We have found there are times when the machine that sets the cap onto the bottle would be just a little bit off-center and would cut that center disk in such a way that the milk would leak out of the cap when it became warm enough to rise in the top of the bottle or when the bottle was turned over.

Mr. Schaefer: Now, if the Master please, I move to strike that. There is no indication that that condition has ever existed in the city of Chicago.

The Master: Overruled.

Mr. Gariepy: Q. Are these caps that you are referring

to, Doctor, the same caps that we had exhibited here
668 this morning, that Mr. Schaefer and I agreed on as
being used in the city of Chicago?

A. The cap that I referred to was the American Seal
cap.

The Master: That is not the question. The question is,
are they the same ones or the same type that he showed
here this morning?

The Witness: They are the same type, but they may not
be made by the same people.

The Master: You can show it to him, Mr. Gariepy.

Mr. Gariepy: Q. Is this it? (Handing cap to the wit-
ness.)

A. It is that type, but isn't this the Seal-rite?

Q. I have got that right here.

The Master: It is the same type of cap. He has already
testified to it.

Mr. Gariepy: Q. Have you ever observed any leakage
in the Pure-Pak container, Doctor, turned upside down, or
from any of your tests and experiments on it? I am talking
about the closed container with milk.

A. Only where the container has been damaged in some
way.

Mr. Schaefer: Just as in the case of the cap?

Mr. Gariepy: He didn't say anything about the cap be-
ing damaged. Did you, Doctor?

669 The Witness: In setting the cap on the bottle the
plunger which comes down sometimes did not hit square
and would cut the cap a little on one side.

The Master: Q. As the usual thing, however, would
you say that the cap is not damaged?

A. In the majority of cases it was not damaged.

Q. As a matter of fact, the case that you mentioned
would be a very exceptional case, wouldn't it?

A. I never attempted to determine the percentage, but
it happened often enough to be somewhat of a nuisance.

Mr. Gariepy: Q. Have you observed the pouring lip
on the Pure-Pak container, Exhibit 2 here?

A. Yes.

Q. What has been your experience with regard to find-
ing that a source of contamination or not?

A. On pouring the milk from the container?

Q. Yes, that is right.

A. On tests that we have made, in which we sprayed

the outside of the bottle with a heavy inoculation of prodigiosus, which is an organism which produces a red color and therefore very easy to find on a plate, we have found that the pouring lip of this bottle is remarkably well protected.

Q. Have you experimented with milk-filled Pure-670 Pak containers?

A. Those were milk-filled Pure-Pak containers that we used in our experiments.

Q. Not with regard to the pouring lip here, but with regard to the matter of expansion of milk and so on, have you experimented with Pure-Pak containers filled with milk in your laboratory?

A. From the standpoint of expanding?

Q. That is right.

A. Yes.

Q. What did you find?

A. We studied the effect of temperatures above freezing and temperatures below freezing.

Q. And what did you find on temperatures below freezing?

A. On temperatures below freezing the milk, naturally, expanded as it was frozen, but never caused the container to break. If you wish, I have a picture showing the milk in one of these containers that has been exposed to 15 degrees below zero for a period of about two days.

Q. Bring it out, Doctor.

(The photograph referred to was thereupon produced by the witness and handed to Mr. Garipey.)

Mr. Garipey: Q. This picture was taken by you 671 and this container was one you worked on?

A. It was taken by the university photographer.

Q. Were you present at the time?

A. I was present.

Q. Does it truly represent the bottle as it existed there to the naked eye?

A. It does.

Q. What is the other one, the other glass bottle?

A. That is a glass bottle filled with the same milk and subjected to the same temperature condition.

Q. What time was this taken, Doctor? How long ago?

A. I believe it was in May.

Q. 1939?

A. 1939, yes.

Mr. Gariepy: I offer that in evidence as Plaintiff's Exhibit No. 44.

The Master: Did you want to cancel those two numbers you had?

Mr. Gariepy: Yes, we did, we cancelled the caps.

The Witness: I would like to mention the point that that glass bottle is broken across the bottom already, as well as cracked at the side.

The Master: Q. What temperature was that?

A. Fifteen degrees below zero, Fahrenheit.

Mr. Gariepy: Mr. Reporter, will you mark that, please?

Mr. Schaefer: Q. And the exposure was two days, 672 Doctor, did you say.

A. Yes.

The Master: It may be received.

(Said photograph of paper bottle and glass bottle filled with milk at 15 degrees below zero so offered and received in evidence was marked PLAINTIFF'S EXHIBIT 44 and is attached hereto and made a part hereof.)

Mr. Gariepy: Q. Doctor, have you performed certain experiments with regard to the exposure of milk in the glass bottle and in the paper bottle at high degrees of temperature?

A. We have studied the effect of sunlight upon the flavor of the milk in these two containers. Did you have reference to that?

Q. That is right.

A. Yes.

Q. And what did you find in those experiments, with regard, first, to the paper bottle and, second, with regard to the glass bottle, under the same temperatures?

A. An experiment was performed in this manner: The same milk was used, of course, in those containers. A series of bottles, quart bottles, filled with the milk, were placed in the sunlight directly. Then periodically a bottle of each was removed from the sunlight and placed in 673 a darkened 40-degree room, for storage. Then twenty-four hours later the milk, after being chilled in this room, held in this room overnight, was removed for organoleptic tests. The results of the organoleptic tests showed that sunlight affected the flavor of the milk in both bottles, that is, both the glass and paper, but to a much greater degree in the case of the milk in the glass bottle than in the case of the milk in the paper container.

Q. How do you account for that, Doctor?

A. The rays of the sun will affect the flavor of any dairy product, particularly the serum portion of that dairy product, the effect of the sun being one upon the protein. In the case of the paper bottle there is a certain filtering action upon the sun's rays that prevents the detrimental ray from entering the inside of the container, to a certain extent. In the case of the glass bottle the rays of the sun apparently pass right through the glass and affect the serum portion of the milk directly, causing a characteristic burnt-like flavor.

Q. Taking milk under ordinary room conditions of 70 degrees, in the glass bottle and in the paper bottle, have you performed experiments with regard to expansion?

A. Yes.

674 Q. In both containers?

A. Yes. What happens, in the case of the glass bottle, is, of course, that the milk expands and will fill the bottle and eventually will force out the cap. In the case of the paper bottle, this particular bottle, there is plenty of room at the top of the bottle for expansion, but the bottle will tend to bulge a little bit.

The Master: Q. Have you performed any experiments to see whether you could observe dirt in one of these paper containers as rapidly as you can in a glass bottle or container?

A. No, sir, I have not.

Mr. Garipey: Q. Was there any leakage, that you observed, Doctor, taking the milk in the glass and in the paper, other than that you have just described, under room conditions, 70 degrees temperature, say?

A. No leakage took place in either one, except what I have mentioned in the case of coming out on top of the disk cap on the glass bottle.

Q. Have you performed any tests, Doctor, with regard to the Pure-Pak container and its ability to resist breakage?

A. We performed what we call a compression test on all of the paper bottles. This work was not done by
675 me, being done in the material testing laboratory of the university engineering department. I observed the results. The bottles were simply placed in this machine and compression tests were given them, and at the point where the bottles would break the pressure was measured.

Q. What pressure was that?

A. I would have to refer to my notes to give you that exactly.

Q. You may refer to them. You cannot recall now offhand?

A. Well, it was over a hundred pounds in one direction and three hundred pounds in the other direction, as I remember.

The Master: Q. In which direction was the heavier pressure? From the top to the bottom?

A. On the side.

Q. ~~On the side?~~

A. On the side, yes.

Mr. Gariepy: Q. Take it in vertical position first, Doctor; how much pressure would it stand?

A. An average of twelve bottles test was 87 in the upright position.

Q. Eighty-seven pounds?

A. That is right.

Q. What was the other, with the V side up?

A. With the V side up it averages about 320 pounds.

Q. By V side up, you mean like that (demonstrating).

676 A. Like this (demonstrating), on the side, with the V side up.

The Master: Q. What do you mean by the V side?

A. Like this (demonstrating).

Mr. Rall: The gable.

Mr. Gariepy: Q. It maintained a flat 300 pounds?

A. Yes.

Q. Show the other position, Doctor.

A. (Demonstrating.) That averaged about 90 pounds. This one is 87 pounds.

The Master: Q. That is vertical, upright?

A. Yes.

Q. Eighty-seven pounds?

A. That is right.

Mr. Gariepy: Q. Now, have you performed any experiments or tests in regard to the warming up action of milk in each container?

A. Yes.

Q. When did you perform those tests, and what did they show?

The Master: When were the tests, also.

Mr. Gariepy: Q. Yes, Doctor, when were they?

A. The tests were performed in 1937. I cannot give you the month.

Q. All right, what were the tests?

677 A. Milk in paper and glass bottles, the same milk, of course, was exposed to room temperature and the temperature changes in those milks observed over a period of three hundred minutes. I have two different tests here. I will have to give you these separately.

This test I am going to give you first, the time of the test was six hours rather than three hundred minutes. The room temperature in this case started off at 96 degrees. The temperature of the milk in the paper bottle was 34 degrees F., in the glass bottle was 34 degrees F. After six hours the temperature of the milk in the paper was 59.8 degrees F. and that in the glass bottle was 87.5 degrees F.

In the other test, the temperature of the room was lower, starting at 72.5 degrees F. The temperature of the milk in the paper and glass containers was 42.8 at the beginning. After seven hours exposure the temperature had risen in the paper to 53.6 and in the glass to 58.64.

Q. How do you account for the increase or the rise in temperature or this warming-up action in the glass over that in the paper on these two tests?

A. The paper has an insulating value which the glass does not have.

678 The Master: The paper has what?

Mr. Gariepy: Insulating value.

The Master: Q. In short, you found that the warming up was more rapid in the glass bottle than in the paper container?

A. That is right.

Mr. Gariepy: Q. Did I ask you concerning the flavor of the milk in the paper container and in the glass container after being exposed to sunshine? Did you give that, Doctor?

A. Yes, sir.

The Master: I think he did.

Mr. Gariepy: All right.

Q. What experiments and experience have you had with this matter of delivery of milk to residences in Urbana, Illinois, in the paper bottles?

A. We have delivered--

Mr. Schaefer: That is objected to as immaterial.

Mr. Gariepy: I think it comes back to the same ques-

tion the Master has raised several times, that there is a hiatus in his mind concerning the experience in other communities with regard to the use of the paper bottle, on which we are going to submit briefs.

The Master: I suppose that the matter of carrying 679 milk probably involves the same problems in one community as in another. They have to carry it some way. I assume the conditions are about the same. I think I will let him answer, and you can cross-examine, to show if there are any differences that might affect the result. Have you started your answer, Doctor?

The Witness: Not yet.

The Master: Read the question.

(Mr. Gariepy's question was read by the reporter as above recorded.)

The Witness: A. As I previously stated, we have been delivering milk on our milk route in paper bottles off and on since March, 1937.

Mr. Gariepy: Q. What have you done in the matter of the delivery of milk to places or residences under quarantine, in Urbana, Illinois, as to the type of container used?

Mr. Schaefer: That is objected to.

The Master: I will let him answer.

The Witness: A. We have always used paper containers, or since I have been connected with the university we always used paper containers.

Mr. Gariepy: Q. In those instances?

A. In those instances when the paper containers 680 were available. When they were not available, of course we used glass, which was left at the house and never brought back.

Q. How many years, that you know of, have you used paper in these instances you referred to, at quarantined places?

A. Since 1927.

Q. Has the use of those paper containers for the delivery of milk resulted in any pathological disturbances, to your knowledge and observation?

The Master: What do you mean, in those instances? Where there was contagious disease?

Mr. Gariepy: That is right.

The Master: Can you answer that?

The Witness: A. Are you referring to the cases of quarantine or the general use of these paper bottles?

Mr. Gariepy: Q. Take the case of quarantine alone.

A. No.

Q. Now, in cases where there has not been quarantine you have used five hundred quarts a day, as you have related?

A. That is right.

Q. What did you observe there with regard to pathological disturbances? Any?

A. There has been none brought to my attention.
681 The Master: I don't know what you mean by pathological disturbances. However, he says there has been none brought to his attention, if he knows what you are driving at.

The Witness: Sickness resulting from these paper containers.

Mr. Gariepy: Yes, that is right, disease caused by any contamination, affecting people; children becoming sick from taking the milk.

The Master: Go ahead.

Mr. Gariepy: Q. Doctor Tracy, have you in your experience and in your experiments and research work ever become acquainted with the phrase "standard milk bottle"?

A. Standard milk bottle?

Q. Yes.

A. No, sir.

Q. Is there any such article or receptacle in the trade known as the standard milk bottle?

Mr. Schaefer: That is objected to.

Mr. Gariepy: Q. Or among the public authorities?

The Master: I will let him answer that question.

The Witness: A. No. There is a standard glass milk bottle, but there is no standard milk bottle that I know of.

The Master: Q. But until these paper bottles were
682 used, there was only one type of container, wasn't there, and that was the glass bottle?

A. No. There were buckets and cans, containers of that type.

Q. I am talking about bottles.

A. Only one type of bottle, yes, glass bottles.

Q. If you are familiar with all of these milk regulations, possibly you would be familiar with the regulations of the City of Chicago as to standard milk bottles.

A. The only standard milk bottle is the one that is the standard glass milk bottle, that I know of.

Q. Then that would mean a standard bottle, wouldn't it?

A. It is a standard glass milk bottle.

Q. But if there were no paper bottles in use, the standard bottle would be the glass bottle, wouldn't it?

A. I interpreted his question to mean a standard set up on the books and records.

Mr. Schaefer: Oh, no.

Mr. Gariepy: Read my question, Mr. Reporter, where I first asked about this.

(Mr. Gariepy's question was read as follows: "Is there any such article or receptacle in the trade known as the standard milk bottle?")

The Master: In the trade covers a broad ground. That might be in the trade in Chicago. It might be in the 683 trade all over the country.

Mr. Gariepy: Well, I will withdraw the question and ask another one.

The Master: I would like to have the witness' answer here on that question, whether he can say now that there is no such thing as a standard milk bottle, when he knows that in the city of Chicago they have such a regulation and it therefore must be known to the trade in the city of Chicago.

The Witness: A. My answer to that question would be based upon an interpretation of the meaning of "standard."

The Master: Q. If you were doing business in the city of Chicago and knew that in the city of Chicago they are not using paper containers, what would you think they meant by a standard milk bottle?

A. I would expect them to mean a glass bottle.

Q. Of a certain general size and shape, wouldn't you?

A. Of a certain general size and shape.

Q. In most cases the bottle would be a little narrower at the top than at the bottom?

A. That is right.

Q. Bulging out a little bit near the middle of the bottle, wouldn't it?

A. Not entirely, because they are using jugs now, which are straight up and down.

684 Q. But, generally speaking, you would have a pretty good picture in your mind as to what they meant by a standard bottle in the city of Chicago, wouldn't you?

A. Yes, I would have a pretty good idea.

Q. Although there may be some variations?

A. That is right.

Mr. Gariepy: Q. Doctor, are there variations in the types of glass milk bottles used as to shapes and sizes?

A. That is right.

Q. And are you acquainted with this gallon glass container that they use in the city of Chicago, with a paper cap?

Mr. Schaefer: That is objected to. I have not heard of any such thing.

Mr. Gariepy: We are bringing one over, Mr. Schaefer.

Mr. Schaefer: I will object to that, on the ground of immateriality.

The Master: Let us see what the witness knows about it.

Mr. Gariepy: We are bringing one over from the library now. We picked up two of them this morning.

The Master: From the library?

Mr. Gariepy: My library. Gallon glass containers, with paper caps, called standard milk bottles apparently by the Board of Health.

685 The Master: What shape are you talking about?

Mr. Gariepy: They are very short-necked and are not anything that has been on display here yet, something new, but they are used every day and the ordinance allows it. They will be over here in a few minutes and we will proceed and I will show them to the doctor.

Q. Doctor, have you made any tests with regard to ascertaining the flavor in paper bottles and the flavor in milk bottles made out of glass?

A. That is probably the first test that we made.

Q. When did you make those?

A. In the spring of 1937.

Q. What did they show?

A. They showed no effect in the paper upon the flavor of the milk.

Q. How many times did you perform those various tests, to note if there was any change in flavor?

A. Innumerable times. I could not tell you the exact number. Probably hundreds of times.

The Master: Q. I suppose if any paraffin gets into the milk it rather has the effect of making the milk appear to be more creamy?

A. No. The paraffin solidifies as soon as it gets into the milk.

Q. Does it?

A. If the milk is kept cold; it is lower than the melting point of the paraffin.

686 Mr. Gariepy: Q. And when it solidifies, Doctor, and when you drink the milk and it happens to have some paraffin in it, how does it taste?

A. It gets in your teeth.

The Master: Q. What if you boil the milk?

A. If you boil the milk and the milk gets cool, is cooled, it solidifies it.

Q. If you drink it warm; however, you still get a creamier taste of the milk, is that right?

A. I don't think so. Paraffin has no flavor.

Mr. Gariepy: Q. You could drink it and not know it; it could be in a glass bottle and you would not know it?

A. It is milk.

The Master: Off the record.

(Discussion had off the record.)

Mr. Rall: Q. At what point would paraffin melt?

A. It would depend upon the paraffin used.

Q. This U. S. Pharmacopeia standard 11 paraffin, the paraffin that is used for paraffining Plaintiff's Exhibit 2.

A. Sometimes they use 125 to 127 degrees melting point, sometimes 135 to 137, depending on the season of the year.

The Master: Q. What is the heat that is applied to boil milk?

687 A. Two hundred and twelve, practically.

Q. What?

A. Just a little short of 212.

Q. And what would be a comfortable temperature at which to drink warm milk?

A. Without burning the tissues, it would probably be around 125 degrees F.

Q. And at that point the paraffin would not necessarily be solidified?

A. It probably would be on the way to being melted.

Q. If it were melted at 200 degrees and the milk had cooled off down to about 125, what then?

A. It would still be melted.

Q. The paraffin would still be in liquid form?

A. Yes, but at the low melting point.

Q. Would you say that the amount of paraffin that might come off of the inside of one of these paper containers and got into the milk would be very small and insignificant?

A. (The witness here performed a demonstration on the paper container for the benefit of the Master.)

The Master: The witness just showed me and demonstrated that if the V is spread quickly at the top of the paper container, the straightening out of the surfaces may release a small particle of paraffin on the inside of the container.

688 Mr. Gariepy: That is, opening it other than at the pouring lip, Master, as is customarily used.

The Master: Yes. That is to say, if there were pressure applied to the top of the container in a downward direction, so as to spread the part that is folded in or if the V were spread apart, there might be a particle or two of paraffin released from the inside of the container and fall into the milk.

Mr. Gariepy: Q. Have you in your experiences in the use of the Pure-Pak container, in Urbana or Champaign—where was that?

A. Both.

Q. Both places?

A. Yes.

The Master: It is the same place.

Mr. Gariepy: Q. (Continuing.) —had any occasion to discern or trace any diseases to said condition?

A. I have not.

Q. Is there a certain food requirement concerning fat content in Grade A milk?

A. Do you mean Grade A milk in Chicago?

Q. Right.

A. I believe they have a standard for the fat and solids not fat in the milk here in the city.

Q. How can the amount of cream in the milk, which we will say is not visible in the Pure-Park container, 689 be measured, on Grade A milk?

A. It would be determined by the Babcock test or the official chemical analysis, either one.

Q. Is that the usual and customary test for obtaining the amount of cream in milk, the butterfat content?

A. It is standard procedure. It varies.

The Master: Q. That is to say, in a paper container you cannot see the mark of the cream near the top of the bottle, as you can in a glass bottle?

A. That is right.

Mr. Schaefer: It is a little more than that, if the Master please.

The Master: What?

Mr. Schaefer: It is a little more than that. Do you want to explain what else there is, Doctor?

The Witness: Do you mean the extent of the cream rising?

Mr. Schaefer: Yes. I mean the fact that the cream not only can be not observed, but the cream does not rise to the top in a paper container.

The Witness: I have never made any studies of that, but studies have shown that the cream does not come to the paper top in the paper bottle to the same extent as it does in glass.

The Master: Q. It does not?

690 A. It does not.

Mr. Garipey: But is it all left in?

A. It is all there, but it does not come to the top of the container.

The Master: Off the record.

(Discussion off the record.)

Mr. Garipey: Q. Have you had any objections, in your experience, Doctor, upon using the Pure-Pak container for two or three years, in Champaign or Urbana, concerning this matter of the non-transparency of the bottle?

A. To be able to see the cream layer?

Q. Yes.

A. No. There has been no criticism made of the bottle in that respect.

The Master: Q. Now, which is it? You said you have had no experience and now you say there is very little criticism?

A. We put out a questionnaire, in which we asked people to criticize the paper bottle, and there might have been—I would like to refer to my records to be sure—there might have been one or two or more instances where the people mentioned that they could not see where the cream was there. If you want me to, I will check and see.

Mr. Garipey: Q. Do you have the figures?

A. Yes.

691 Mr. Schaefer: Let us have it. It would be very interesting.

The Witness: Yes, that was mentioned, "Difficult to see the cream line."

Mr. Schaefer: Q. How many out of how many persons answering the inquiry raised that point?

A. I don't believe I have that information.

The Master: Q. What is your best recollection?

Mr. Gariepy: Q. How many people who got the inquiry replied making this answer?

A. Two hundred and twenty-one replied.

The Master: Q. And about how many raised that point, about the cream layer, to your best recollection?

A. Oh—do you have it there, Mr. Schaefer?

Mr. Schaefer: Here. (Handing document to the witness.)

The Witness: A. Thirty-two.

Mr. Gariepy: Q. Thirty-two out of two hundred and twenty-one?

A. Yes.

Q. Or two hundred and twelve, whatever it was.

Mr. Schaefer: Let us have the precise figure.

Mr. Gariepy: Q. What is it?

A. This is a little different questionnaire than the one I was referring to. This was made sixteen months after the paper bottles were used and includes the information on all three types of bottles.

Q. That is, Pure-Pak, American Can, and the glass?

A. Pure-Pak, Seal-Rite, and American Can.

Q. All right. Go on.

A. One hundred and fifty answered the question there.

Q. And how many replied out of the one hundred and fifty touching the subject of the cream line being visible?

A. Thirty-two. Wasn't that the figure there, Mr. Schaefer?

Mr. Schaefer: Yes.

Mr. Gariepy: Q. And have you a later one, or is this the later one?

A. That is the last one.

Q. What does the earlier one show, Doctor?

A. I haven't any record of the number that mentioned that in the early one.

Q. Doctor, we were asking you a few minutes ago concerning a standard milk bottle. I show you a gallon bottle here, with a cap, entitled "Bowman Dairy Co., Grade A milk, pasteurized, to be sold before noon Saturday, 7524 Central Avenue, River Forest, Illinois." I will call that Exhibit No. 45. Have you ever seen that before?

A. That type of container?

693 Q. Yes.

A. Yes, sir.

Q. Is that a standard milk bottle?

A. Again, it depends on your definition of standard milk bottle.

Q. Do you see anything standard about that, as a milk container, for the use of Grade A milk?

A. I would say it is not as standard as the commonly accepted glass milk bottle.

Q. And are these bottles washed the same way as these smaller quart bottles are washed, that you described?

A. Much in the same general way, yes. You cannot use the same machines altogether for them.

Q. Will you look at the top or the cap on this gallon bottle and tell me whether those are the type of caps you had reference to in your testimony as being made out of virgin spruce paper and emitting some leakage on the lip?

A. I did not testify in regard to what these caps were made out of, I don't believe. It is the type of cap we studied, which permitted a certain leakage in the quart milk bottle.

Q. That is the same type of cap?

A. Yes.

Mr. Gariepy: Mr. Reporter, will you mark that gallon jug Plaintiff's Exhibit 45, please?

694 The Master: Off the record.

(Discussion off the record.)

Mr. Gariepy: Mr. Schaefer, you do not deny that these same types of jugs are permitted under your ordinance for the bottling of milk and the sale of milk in the city of Chicago, do you?

Mr. Schaefer: So far as I know, no milk is sold in that type of container in the city of Chicago.

The Master: That is, with the permission of the Board of Health?

Mr. Schaefer: With or without. No milk is sold in that type of container.

Mr. Rall: Why don't you mark them and—

Mr. Schaefer: Bring your man in and let us find out where he got them. We will take care of Bowman.

The Master: I was wondering if you can describe them in the record here some way, instead of putting the bottles in.

Mr. Gariepy: I will describe Exhibit No. 45 as a—

The Master: Describe one of the bottles, without giving it a number.

Mr. Gariepy: All right. A gallon transparent bottle,

containing a cap with the legend "Bowman Dairy Co., Grade A milk, pasteurized, to be sold before noon Saturday, 7524 Central avenue, River Forest, Illinois."

695 The Master: In general its shape is that of an ordinary milk bottle.

Mr. Gariepy: Jug.

The Master: With the top part of the bottle being small, about two inches in diameter, and having a short neck, and then having a shoulder or bulge from the bottom of the neck to about one-third of the way down and then the bottle, having vertical sides down to the bottom, being rounded off just like an ordinary milk bottle. It is just a gallon bottle, with a wider body than the quart bottle. That is about right, isn't it?

Mr. Schaefer: And it is made of glass.

The Master: And it is made of glass.

Mr. Schaefer: That has not been mentioned.

The Master: And contains the words "Bowman Dairy Company, milk of superior flavor," on the side, and also something about chocolate milk there too.

Mr. Schaefer: That is immaterial.

Mr. Gariepy: Yes, there is something about chocolate milk, hot or cold.

Mr. Rall: With a wide bail or handle attached around the neck.

The Master: In order to make it possible to carry the bottle with greater use and facility. The other
696 bottle is substantially the same, excepting that it is marked "Borden-Wieland Products."

Mr. Gariepy: That is right.

Q. Have you tested samples of milk taken immediately after the filling, Doctor, from the Pure-Pak machine, at the plaintiff's plant, or at your plant in Urbana?

A. Tested it in what way?

Q. Testing samples of milk, with regard to ascertaining whether there is any paraffin in the milk as it comes through?

A. Yes, we have tested for paraffin.

Q. And what did you observe?

A. We have found some paraffin in the milk. I think I have a resume of the exact amount, if you want me to give it to you.

Q. Yes.

A. May I read this to you?

Q. Yes.

A. "Careful examination of the opened paper containers filled with a fluid such as water sometimes revealed a few particles of paraffin floating on the surface."

We used the water instead of milk, because the paraffin would show better in the water.

"An attempt was made to determine the amount of this free paraffin by filling eight Pure-Pak containers with 697 water and then filtering the water through Gooch crucibles after the containers had been carried on a milk delivery truck for eight hours. The water from four containers was placed through one crucible and the water from the other four containers was filtered through a second crucible. The average weight per container of the filtered paraffin was .003 grams in one case and .0016 grams in the other."

698 The Master: Q. How did you get the top off of the container in these experiments?

A. At that time the containers were opened at the top. The present day container, you open it up here (indicating).

Q. The only reason I asked was that I thought possibly in this present type of container, in order to get it open at the top, the cutting or tearing of the top would necessarily release some pieces of the paraffin.

A. I think it is more likely, Master, in the old method of opening, because you have got more breakability, you see (indicating).

The Master: Go ahead.

Mr. Rall: Q. Your opinion is that there would be less likelihood of paraffin breaking off from the roof, so to speak, with this present type of opening on the side?

A. That is right.

Q. Than at the time you used to take the staple out and open it up?

A. That is right.

Q. The tests you made were by opening the staple?

A. That is right.

And then by opening the paper?

699 A. Yes, sir.

Mr. Garipey: Q. Do these paper containers show the presence of any gas producing bacteria?

The Master: The question is pretty broad. Do you mean the empty containers?

Mr. Garipey: Q. That is right.

A. I never found any.

Q. Is that an advantage or a disadvantage to health authorities in safeguarding the public health?

A. It would be considered an advantage from a sanitary point of view.

Mr. Schaefer: Q. Is that your work, Doctor, that you just referred to?

A. Yes. Which do you mean?

Q. This gas-producing bacteria?

A. "We."

Mr. Gariepy: Q. Is the type of bacteria that you found in these paper containers of any sanitary significance?

A. I would say not, because they have been mostly spore forming.

Q. Do you know what temperature the paraffin is heated to and then applied to the bottle and the blank is inserted in, before it is filled with milk?

A. Do you mean at the Dean Plant?

700 Q. Yes.

A. At the time I tested the Dean—you don't call it "Dean," do you?

Q. Dean or Fieldcrest Dairies?

A. At the time I tested the Fieldcrest Dairies, the temperature of the paraffin application was 170 degrees.

Q. What effect has this temperature on the matter of reduction or destruction of micro-organisms or bacteria which may be there present?

A. It tends to reduce it.

Q. What has been your experience with regard to showing bacteria surviving the conditions existing on the modern paper bottling machine?

A. What is the question again, please?

Q. What has been your experience with regard to showing the bacteria surviving the conditions existing on the Ex-Cell-O Machine, the machine that fills the Pure-Pak Container with milk? What did you find concerning bacteria existing there?

A. In the machine itself?

Q. Yes.

A. We checked the machine we had in our own laboratory from the standpoint of following the milk, in one case regular milk, and in one case sterile milk, from the time the milk left the cooler until it was placed into the 701 container, and amount of pick-up in the bacterial con-

tent of that milk was no more than you would ordinarily expect to get in any milk bottling, filling operation.

Q. Have you observed the sterility of the paraffin bath on this machine that fills the Pure-Pak Container?

A. That is right.

Q. What were your results and what did you observe?

A. We found no bacteria.

Q. Have you performed certain experiments with regard to containers housing cottage cheese and butter as commercially sold in stores in the City of Chicago or in your city, Urbana?

A. I have not.

Q. Have you checked those with regard to paraffin?

A. I have not.

Q. Have you an opinion from your experiments and from your research work, Doctor, now, as to whether this Pure-Pak Container is a sanitary sterile milk container?

A. I consider the Pure-Pak Container a sanitary container. I wouldn't consider it was sterile, if you put the proper interpretation on the word "sterile."

Q. Sterile, as used in the dairy industry, in the matter of paper containers or any containers for milk?

702 A. Sterile as complying with the standard requirements of not more than one bacteria per c. c. of capacity.

Q. Yes.

A. I would so consider it.

Q. Is the bacteria in the amount you found on these various tests of any health significance, Doctor?

A. I would say not.

Mr. Rall: Q. You have referred to certain tests being made on an Ex-Cell-O or Pure-Pak Machine in the University Dairy or the University Creamery?

A. Yes, sir.

Q. Is this a picture of that machine?

A. That is the machine.

Mr. Rall: Without offering this, may it be agreed that the machine to which the witness referred is the typical machine shown in the picture, plaintiff's exhibit 15-A?

Mr. Schaefer: Yes.

Mr. Rall: You may cross examine.

The Master: We will take a recess for a couple of minutes, here.

(Recess.)

The Master: Cross examine.

703

Cross-Examination by Mr. Schaefer.

Q. During the course of the morning you testified to bacterial counts which you made on unparaffined paper containers, 128 of them.

A. Yes.

Q. You testified later in the day concerning some tests that you made with respect to glass bottles.

A. Yes.

Q. 161 or 162 of them.

A. Yes.

Q. Was the same technique used in both of those tests?

A. Standard rinse tests.

Q. I notice you reported on one test in the number of colonies?

A. Yes, sir.

Q. And the other in hundreds?

A. That's right. It is just a difference in the way it is recorded. In one case I was quoting you from a publication, or, rather, a manuscript ready for publication, and the other data was taken off of the laboratory records.

Q. That is, to say, your statement as to the result of the tests on unparaffined paper containers should, in each case, be multiplied by one hundred?

704 A. That is right.

Q. Is that right, Doctor?

A. Yes, that is right.

The Master: Q. In each case, or in one case?

A. In each case.

Mr. Schaefer: Q. In the case of each container it should be multiplied by one hundred?

A. Where there is one colony on the plate, you multiply that by one hundred to get the number per bottle.

Q. In this last container you described, where there were 17 colonies on one plate and 19 colonies on another, you multiply each of those by one hundred and you would have 1700 on one plate and 1900 on another?

A. Yes.

The Master: How many are in a colony, a hundred?

Mr. Schaefer: Q. Will you explain to the Master why that is?

The Master: Why do you multiply it?

A. You take the hundred c. c. and put it in the bottle, and you take out that one c. c. and plate it out, and whatever you find there you will have to multiply it out.

Mr. Schaefer: Q. Is the same thing true of the
705 tests you reported concerning the bacterial count of
paraffined containers?

A. Yes.

Q. You reported those in terms of individual colonies
and in the case of each bottle, the figure, which you gave
on your direct examination should be multiplied by one
hundred, in order to be a comparative figure with the glass
figure?

A. Yes.

Q. What experience have you had with the business
of the manufacture of paper, Doctor?

A. Experience?

Q. Yes.

A. Simply visits to the paper mill.

Q. How many mills have you visited?

A. Three.

Q. Where were they and when?

A. Three mills in connection with this study.

Q. Just what were those mills?

A. Detroit.

Q. What was the name of that one?

A. That is the Detroit Sulphite, isn't it? Detroit Sul-
phite. Cherry River, and one in New Jersey, the name has
left me right now.

Q. What experience have you had with reference to
706 the business of manufacturing paper, prior to your
trip to the Cherry River Mill?

A. On the visit to the Detroit Mill, prior to that.

Q. That is, your experience was limited to the visit
to Detroit?

A. In this connection, yes, but I visited other mills in
connection with the manufacture of butter cartons and
other types of containers or various other products.

Q. When did you go to the Cherry River Mill?

A. We wanted to visit as many of these paper mills
as we could, reasonably, so as to be able to study from
a sanitary point of view paper containers from the be-
ginning of the paper making process.

Q. And the condition of the mill is a significant factor
in the sanitary condition of the paper container?

A. That is right.

Q. Why did you sample the water at the Cherry River
Plant?

A. Why?

Q. Yes.

A. Because the water, undoubtedly, plays an important part in the manufacture of paper, from a sanitary standpoint of view, because the paper comes in contact with so much water during the process of manufacture.

707 Q. Did you sample the water at the Detroit Mill?

A. Yes.

Q. What did you find there?

A. We found that the water at the Detroit Mill was not as good as the water at the Cherry River Mill.

Q. Can you be more specific as to what you found at the Detroit Mill, Doctor?

A. We found higher counts. We also found some B-coli.

Q. In the water used in the paper mill in Detroit?

A. That is right.

Q. That mill was the mill manufacturing paper for paper milk containers?

A. It was at that time. I don't know what it is doing now.

Q. How was the water at the New Jersey Mill?

A. We didn't make an examination—simply observations.

Q. Why didn't you examine that water, Doctor?

A. Well, we were not equipped to do it. It is too far from home.

Q. Is that significantly further than West Virginia?

A. Yes.

The Master: Q. In the Cherry River case, all you did was take a container back to your laboratory at Urbana, didn't you?

708 A. We took facilities with us for examining it.

Mr. Schaefer: Q. What you mean to say is that you didn't have a container with you when you went to New Jersey?

A. No.

Q. You testified that your analysis of the chlorinated water used at the Cherry River Mills was free of B-coli?

A. Yes.

Q. What did your examination reveal as to the unchlorinated water at that mill?

A. There was some coli present in the water.

Q. How is the chlorine put into the water at the Cherry River Mill?

A. I couldn't tell you.

Q. You don't know, is that what you mean?

A. I don't know.

Q. Have you ever observed the washing of glass milk bottles in the City of Chicago?

A. Yes, sir.

Q. Where?

A. Bowman's, Borden's, Sidney Wanzers, Hunding's, Ogden Dairy.

Q. When, Doctor?

A. I believe that is all.

709 Q. When?

A. When?

Q. Yes.

A. Several times during the period of the last—since I have been acting in the capacity that I am now acting. You see, we make inspection trips to Chicago plants every year with our students.

Q. You testified as to the possibility of milk leaking from glass bottles when the caps were damaged by defective capping?

A. Yes.

Q. There is, of course, the same possibility of leakage when the Pure-Pak Container is defectively operating?

A. Do you mean the container itself?

Q. Yes, I mean the container itself would leak?

A. Oh, yes, we recognize the possibility of leaks in it.

Q. Did you ever have any trouble with leaky containers in Champaign?

A. Yes, we have had trouble.

Q. Of what nature was it, Doctor?

A. We have had some complaints from our consumers, that bottles leaked.

Q. What was the reason for that?

A. The reason for that?

710 Q. What was the reason for the leakage?

Mr. Gariepy: Let's find out which bottle you are referring to, Mr. Schaefer.

The Witness: Paper containers, you have reference to?

Mr. Schaefer: Q. Yes.

A. I think, in most cases, the bottle becomes damaged on the corner, somehow, in the handling of it.

The Master: Q. On one of the edges?

A. That is right, it gets hit suddenly with a sharp blow of some kind which causes a leak.

Q. Of course, in the case of leaks, both with the paper and the glass bottle container, that carries with it the possibility of bacteria getting into the milk through the hole through which it is leaking; isn't that right?

A. Yes, as soon as the bottle is opened in any way, there is the possibility of contamination, regardless of the type of bottle.

Mr. Schaefer: Q. How many kinds of paper containers are there that you know of, Doctor?

A. I couldn't say.

Q. How many do you know of?

A. I have seen pictures of a collection at Geneva and I have seen the collection there. He must have had fifteen or twenty, I guess. There were a good many foreign bottles in the group.

Q. You don't know how many are in commercial operation, do you?

A. The only ones I know besides the three that I have already mentioned that are in commercial operation, are three others.

Q. There may be others?

A. Yes, there may be others.

Q. Of which you don't know?

A. Yes.

Q. With respect to the pouring lip as a possible source of contamination, on what size bottles did you make the tests that you referred to?

A. Quarts, pints and half pints.

Q. Was Dr. Prucha there when those tests were made?

A. Yes, sir, we made them together.

Q. Will you describe the procedure used in making those tests?

A. The bottles were lined up on the table in one laboratory, separate from the room in which we made our plates, and the prodigiousos, this contaminating fluid, was placed in an atomizer.

Q. Who did that, Doctor?

A. We did it together.

Q. You were there at the same time Dr. Prucha was?

712 A. Yes.

Q. Go ahead.

A. I pumped the prodigiousos, contaminating material, on the bottles from this atomizer, I went up and down the row, spreading on the bottles, four times.

Q. Using those size containers?

A. Yes, sir.

Q. Dr. Prucha testified that he never tested the pouring lip of any size other than quarts, and I am just wondering how that discrepancy occurred?

A. That was about two weeks ago.

Q. These are tests run subsequently?

A. Yes.

Q. I see.

Mr. Gariepy: I don't want the record to show that Dr. Prucha has testified.

Mr. Schaefer: "Dr. Prucha stated"—that's right.

Q. Will you give us the results with respect to quarts, pints and half pints, Doctor?

A. I couldn't do it except in a general way, because I don't have the record with me.

Q. Do it the best way you can.

A. As I recall, there was one plate which showed two colonies of prodigiousos in the milk. Of course, after 713 this spraying was done, half of the containers were permitted to dry and half were opened and poured immediately while they still had these beads of contaminating material all over the surface, and there was one plate from one of the containers which was poured from the milk which was removed from the bottle while it was still wet that showed prodigiousos.

Q. How many bottles did you run tests on?

A. I was just trying to think. As I recall, we had a case of it.

Q. How many are in a case?

A. Twelve.

Q. How many?

A. Twelve of the quarts. I can't remember the exact number, but it was around a dozen. Some of the bottles we couldn't use. We lost one or two of them, bringing them down.

Q. What was that?

A. We lost one or two of them, bringing them down, so I couldn't give you the exact number now.

Q. You referred to the expansion of milk in a Pure-Pak Container and in a glass bottle?

A. Yes.

Q. Will the effect of expansion of milk be different in a glass bottle than in a paper container other than the Pure-Pak Container?

714 A. Well, that would depend upon how much space there was above the milk level for expansion of the material in the particular bottle under consideration.

Q. Did you make tests with respect to expansion on any other type of container than the Pure-Pak?

A. One other.

Q. What did that show?

A. That showed practically the same result as with this container.

Q. What was that other container?

A. American Can.

Q. How much space is there at the top of the American Can container?

A. I never measured it.

Q. There is space there?

A. Yes.

Q. You have not performed that experiment with respect to the other container to which you referred?

A. No, sir.

Q. What is an organ oleptic test?

A. An organ oleptic test?

Q. Yes?

A. It is a test by taste.

Q. That is a test simply by human taste?

A. That is right.

Q. Tasting?

715 A. Yes.

Q. Will you describe the procedure for that test?

A. I will have to describe it as I explain it to my students.

Q. Go ahead.

A. I will have to describe it as I explain it to my students, how they should judge milk: Take the milk into the mouth, permit it to warm up, breathe rapidly through the nose, with the mouth still full of milk, then spit out the milk, don't swallow it.

Q. Just when do you taste it, just before you breathe rapidly or not?

A. While you are doing it.

Q. You testified, Doctor, that you had no knowledge

of any pathological disturbances because of the use of paper containers in your dairy at Urbana?

A. That's right.

Q. Did you have any knowledge of any pathological disturbances because of the use of glass milk bottles in your dairy, Doctor?

A. I did not.

Q. You testified also that you had no occasion to trace a disease resulting from the use of paper containers. Have you had occasion to trace disease resulting from the use of glass bottles, Doctor?

716 A. Only in this way, that periodic cases of typhoid fever in the community, the health officials, one of the first things they do is to trace the source of milk supply used in that home.

Q. That is a routine procedure?

A. That is right.

Q. You trace that right back to the farm, don't you, if you can?

A. The source of the disease, yes, if you can. Of course, we don't always do it.

Q. In your test to determine whether or not paraffin gets into the milk in the Pure-Pak paper container, what tests did you make?

A. We filled the containers with water so that the paraffin, in case it was there, it would be more easily seen, and hauled these containers around on the milk delivery wagon, on the milk route, followed the same trip that a regular milk bottle does, and then brought them back and opened them up.

Q. How many bottles were there?

A. Eight in this particular test.

The Master: Q. Did you open them up in exactly the same way that you do the regular milk bottle?

A. The same way, we did, yes, every bottle when filled with milk. At that time they were opening 717 from the top. That was before they developed the side opening.

Q. Instead of filling the bottle with milk, you filled it with water at the dairy?

A. Yes, sir.

Q. And then let it go through the same channel of distribution as the bottle filled with milk?

A. That's right.

Q. Then you opened it up in exactly the same way?

A. That's right.

Q. So that there was no cutting of the top of the paper container?

A. No.

Q. Which might release some particles of paraffin?

A. No.

Mr. Schaefer: Q. How many of those bottles were free of paraffin, of the eight?

A. They all had a small amount of paraffin in them.

Q. Every one of them had some paraffin in them?

A. Yes.

Q. Would the paraffin act the same way if you used milk instead of water?

A. It probably would.

Q. Suppose you used cream?

A. I would expect the same results without regard to what was used, with respect to mechanical breaking off of the paraffin in the container.

Q. Will paraffin act the same way, when it gets into cream, that it reacts in the water?

A. From the standpoint of flowing on the surface?

Q. Yes.

A. I couldn't say. I never tried mixing the two together.

Q. You don't know whether or not paraffin will dissolve in cream?

A. No.

Q. You referred to a test which you performed to determine the pick-up, as you said, of bacteria from the Ex-Cello-O Machine?

A. That's right.

Q. Will you describe that, please, Doctor?

A. Well, there were several tests conducted. The general procedure was to take the count of the milk in the vat, after pasteurization at the cooler, in the receiving tank at the filling machine, the first bottle filled and periodically during the filling process a bottle was pulled out and it was checked for bacteria.

Q. And what did you find? What was the result of those tests?

A. As I explained, I guess, this morning, there was some increase in numbers of bacteria in the milk due to pick-up from the machine as the milk went

through; it was very small and certainly no more than would be expected from the mechanical operation.

Q. Will you tabulate the results of those experiments, Doctor?

A. I think I could.

Q. Do so.

A. Are you ready?

Q. Yes, Doctor.

A. The number of bacteria in the pasteurized milk in the vat, at the start of the bottling process, 250 per c. c.

At the end of the bottling process there was 105.

That is a very low count milk, to begin with. Then the count on the milk, on this same milk, at the time it reached the reservoir or the bottle filling machine, the Pure-Pak, it was 505.

At the middle of the run, 85.

At the end of the run it was 90.

The first bottle filled was 560.

The second bottle filled was 950.

The third bottle filled was 895.

The twenty-fifth bottle filled was 360.

720 The fiftieth bottle filled was 220.

The seventy-fifth bottle filled was 170.

The hundredth bottle was 180.

The hundred and twenty-fifth bottle was 270.

The hundred and fiftieth bottle was 140.

The hundred and seventy-fifth bottle was 160.

The two hundredth bottle was 140.

The two hundred twenty-fifth bottle was 195.

The two hundred fiftieth bottle was 100.

The Master: Q. One hundred what?

A. Bacteria per c. c. of milk.

Q. Why does it go down from the start of the reservoir?

A. That is due to the fact that the first milk from any system is always going to be high, because you can not destroy all of the bacteria that are on that conduit or the machine or whatever your milk comes in contact with as the milk flows through a pipe line from the cooler to the bottle filler and then comes in contact with the receiving tank on the bottle filler. Those surfaces are not sterile.

Q. The impression I got was, we'll say, a quart of milk that had 505 bacteria at the start, that first got into the reservoir and then it decreased by the time it got out of there?

721 A. No.

Q. That is not what you mean?

A. This is the middle of the run, probably half way. Later, another sample was taken with 85. We had washed out the bacteria in the line by that time.

Q. And these varying figures are the milk that are all a part of the one great big batch of milk?

A. Yes.

Q. The various parts of it would give you a little different bacterial count?

A. The first milk, the first two bottles are higher than any others—the first three.

Q. Would you say those were the same ones that represent the start of the reservoir?

A. That's right.

Mr. Schaefer: Q. Not the same bottles, but the same milk?

A. Approximately the same milk. That gives you the picture.

Q. May I see the rest of the table?

A. Yes.

Q. Would you say that, on the average, there was an increase of more than one-hundred per cent in the bacterial content of the milk flowing through the machine?

722 A. There was in this particular milk, because it was very low to begin with.

Q. And in some instances it was more than one hundred per cent, is that right, Doctor?

A. What is that?

Q. Is that right?

A. What is that?

Q. In some instances it was more than one hundred per cent? Is that right?

A. That's right.

The Master: Q. The first milk showed the largest increase, but the latter milk did not show a large increase in bacterial content. Is that correct?

A. That is correct.

Mr. Schaefer: Q. All of it increased. Is that correct?

A. All of the first milk.

Q. All of the milk increased?

A. No. Your 2250th bottle, for example, was a little bit less than the count of the milk in the vat itself.

Q. What about your 90 count, here?

The Master: It would be approximately the same, wouldn't it?

A. You wouldn't split hairs on bacterial counts 723 that low. Your experimental error would take care of differences like that.

Q. That is, to say, the last milk in the vat had a count of 105, and then approximately the same milk at the end of the machine reservoir was about 90, and then the 290th bottle—

A. The 250th bottle.

Q. The 250th bottle was 100?

A. That's right.

Mr. Schaefer: Q. The middle bottle was the 150th bottle. Is that right?

A. The middle bottle?

Q. Yes.

A. About right in here (indicating).

The Master: We will take a short recess.

(Recess.)

Mr. Schaefer: Q. Doctor, what is the source of pick-up bacteria to which you just referred?

A. Do you mean between the pasteurizing vat and the bottle?

Q. Yes.

A. Surface of the cooler, milk pump, sanitary pipe lines and the milk receiving tank on the Pure-Pak Machine and the filling devices.

Q. You mentioned one cause of leaky containers.

A. Yes.

724 Q. What are some of the causes?

A. We occasionally would find containers leaking as they came out of the machine, in most cases they seemed to be around the bottom, this part here (indicating) where the bottle was closed at the bottom.

Q. Can you account for that?

A. I presume it was an imperfect application of adhesive.

Q. Suppose the machine stops in operation with containers in the paraffin bath, what will result from that?

The Master: Will you speak louder? I can not hear you, Mr. Schaefer.

Mr. Schaefer: Q. Suppose the machine stops in operation, with the container in the paraffin bath, will leakage result from that?

A. I couldn't say. We never had that experience.

Q. You never encountered that?

A. No.

Q. Is there a tendency for milk to drop on the outside of the container from the filling process or during the filling process?

A. Yes.

Q. How do you remove that?

A. We remove it with a spray of water.

725 Q. Applied to the outside of the container?

A. That's right, then following that spray of water with a blast of air.

Q. There is, is there not, a tendency for slivers of paraffin to appear in the milk from some containers?

A. That is right.

Q. What is the explanation for that?

A. I presume it is due to uneven application of the paraffin on the inside, causing a little heavier application at one point than at another, and in handling the container that sliver of paraffin was broken and caused to float into the milk.

The Master: Q. How is this bottle filled, through the pouring lip?

A. It is open.

Q. It is open and then stapled?

A. Yes, that's right.

The Master: Go ahead.

Mr. Schaefer: Q. How can you tell whether or not a container is completely filled?

A. Our method was to have a light shining from one side of the container, which would show through the container and we knew to what point the container should be filled to contain a quart, and the operator would check
726 that as he stood in front of the container, he picked them off and put them into the carton, he would make that check up as he lifted them out.

Q. That was your regular practice?

A. That's right.

Q. Did he find containers that were not completely filled?

A. At the end of the run when we ran out of milk in the supply tank, that would be the cause. The operator didn't know that he was out of milk, and the bottles kept coming through.

Q. Is that the only time that you had that experience?

A. That is the only time, yes, sir.

Q. Have you had any problem in connection with the paper cartons in which the Pure-Pak Containers are packed for delivery?

A. Do you mean keeping them fresh and attractive? Is that what you mean, keeping them fresh and attractive?

Q. I asked you if you have had any difficulty, Doctor?

A. That is the only problem we had, is in connection with the number of times we would use those for delivering the milk in them. After they had become soiled they were discarded.

727 Mr. Rall: Are you referring to the corrugated boxes in which the paper milk bottles are placed for delivery?

Mr. Schaefer: Yes.

Mr. Rall: For delivery by the delivery man.

Mr. Schaefer: Yes.

Mr. Rall: Let's keep the record clear.

Mr. Schaefer: Q. Doctor, in your opinion; is there need for a better waterproofing material of paper containers apparent?

A. Yes, I think there is—for better waterproofing material.

Q. Why, Doctor?

A. Because the paraffin is not one hundred per cent perfect, and until we reach the hundred per cent we always have need for something better.

Q. One of the reasons why you need a better method of waterproofing is the tendency of paraffin on the inside of the bottle to chip off?

A. That is right.

Q. And get into the milk?

A. That is one of the reasons.

Q. What are some of the other reasons?

A. Possibly another type of waterproofing material would give greater rigidity to the bottle. Of course
728 that is problematical, but it is possible that it would.

Q. Did you make any tests with respect to the absorption of the Pure-Pak Container, Doctor?

A. Absorption of water, yes.

Q. What was the result of those tests?

A. We found some absorption of moisture from milk, skim milk; the longer the container was held and the higher the temperature at which it was held, the greater was the absorption. The maximum amount of absorption was about 2½ grams in a quart.

Q. Is there a problem in connection with the bulging of side walls of paper containers?

A. To some extent there is a problem in that the housewife naturally would object to a container which is bulged, the milk layer would be dropped in the bottle and she doesn't like that and she doesn't like to handle a bulgy bottle.

Q. Is the amount of paraffin found in the milk related to the question of whether or not the container bulges?

A. I never have checked the correlation between bulging and the amount of paraffin in the milk. I have an opinion on it but I have never checked it.

Q. What is your opinion, Doctor?

729 A. My opinion is that the more bulging there is, there would be less paraffin.

Q. When were you employed by the Ex-Cell-O Corporation?

A. I have never been employed by them.

Q. You have been employed by the Fieldcrest Dairies, Incorporated?

A. What is that?

Q. Have you even been employed by the Fieldcrest Dairies, Incorporated?

A. I have done some special test work for them on one occasion.

Q. When was that?

A. I believe it was early this spring.

Q. What was the nature of the test work that you did?

A. The nature of the work was to work out a method for making sweet and condensed milk for them.

Q. Who paid your expenses to the Cherry River Mill and the other paper mills that you described?

A. The Cherry River people paid our expenses to their plant; the Ex-Cell-O, to Detroit; the American Can, to the New Jersey plant.

Q. Did you receive any compensation in addition to your expenses?

A. No, sir.

730 Q. You received simply your expenses?

A. Yes, just the expenses.

The Master: Q. What was the purpose of your going there?

A. In connection with the study of paper containers, we thought we ought to have a complete picture, starting

with the log, right on through to the finished paper bottle; it gives us a better background to work from.

Mr. Schaefer: Q. Who pays for the work that you and Dr. Prucha are doing at the University of Illinois?

The Master: What work?

Mr. Schaefer: The work to which the witness has testified.

Mr. Gariepy: Research work testified to.

The Witness: It is a project set up on the books, "Study of Paper Containers".

The Master: What?

The Witness: It is part of our experimental work.

Mr. Schaefer: Q. Who pays for it?

A. It is paid for by the taxpayers of Illinois.

Q. And from no other source?

A. No, sir.

The Master: Q. Why should there be so much emphasis placed on paper containers at the University of Illinois?

731 A. Well, any experimenter in any field is anxious to find out all he can about the news that is coming out in his field and that is what prompted us to go into the paper milk containers, in the first place, we saw a new type of container which we knew the industry would be asking us about, and we wouldn't be in position to answer them unless we went into a study of that. That is the same thing that prompts us to go into any study, to get facts, so that we are prepared to take care of our constituency in the State.

Q. Are you a partisan in favor of these paper containers now?

A. Well, I naturally developed considerable interest in the paper containers, having worked with them for two and one-half years, and I have been convinced that they have many advantages.

Mr. Schaefer: Q. Who paid for the Pure-Pak Machine that you use down there?

A. Who paid for the Pure-Pak Machine?

Q. Yes.

A. The Pure-Pak Machine was loaned to us by the Ex-Cell-O Corporation; they paid for the transportation in and out.

Q. Is there any grant to the University of Illinois
732 for work in connection with paper containers?

A. Not a dime.

The Master: Grant by whom?

Mr. Schaefer: I was just going to ask that question, if there was one.

Mr. Gariepy: There isn't any grant.

Mr. Schaefer: I have in mind the Geneva situation.

The Master: Q. Whatever work you are doing out there is done at the expense of the taxpayers, isn't it?

A. That's right.

Q. And there is an appropriation to cover the work?

A. Yes.

Mr. Schaefer: I think the witness and I understand one another.

The Master: Go ahead.

Mr. Schaefer: Q. Your expenses here today are being paid by whom?

A. Paid through Mr. Gariepy's office, I presume that is Fieldcrest Dairies.

Q. Who paid your expenses when you sat here and listened to Dr. Rice's testimony?

A. It was being paid for by the Staley Corporation of Decatur.

Q. What is the interest of the Staley Corporation in this litigation?

733 A. They have none whatsoever. I was here in Chicago on another matter and dropped in on this hearing.

Q. And why did you happen to drop in here?

A. I was interested.

Q. Are you receiving any compensation for your testimony here today?

A. None whatsoever, no arrangements have been made whatsoever for compensation.

Q. Do you expect to receive any compensation?

A. I expect to get my expenses.

Q. Do you expect to receive anything in addition to your expenses?

A. I think it is customary to pay a fee for testifying for a court of this type.

Q. Then, you do expect to receive compensation?

A. I do.

Q. How much do you expect to charge, Doctor?

A. I have not been able to find out what the customary charge is, as yet, so I can not tell you.

Q. You have no idea?

A. The last case I testified on I charged one hundred dollars.

Q. Do you expect to make the same type of charge here?

A. It won't be any more than that. It might be in 734 that neighborhood.

Mr. Schaefer: That is all.

Redirect Examination by Mr. Gariepy.

Q. Doctor, you were in my office last Friday?

A. Yes.

Q. You were in the city and I heard that you were in the city and I asked you to come over to my office and you came over to my office, at my request?

A. Yes, sir.

Q. You came here to testify at my request?

A. Yes, sir.

Q. With regard to the matter of the table of the bacteria count shown by your experiment, as the milk went from the vat, and tank, through and was filled, do you know what the permitted requirement or the permitted schedule is for the number of bacteria allowed in the City of Chicago, in the vat of unpasteurized milk per cubic centimeter?

A. I believe it is 200,000 in the raw milk.

Q. If there had been 250,000 in the vat that you performed these tests on, what would your schedule have shown here with regard to being an increase of one hundred per cent or more?

A. After the pasteurization of this milk, of 200,000, the count would have been reduced to 30,000 or less 735 in order to comply with requirements, and the bacterial pick-up would have resulted from passing that milk through this same system, assuming it is the same as we found here, seven or eight hundred; that would mean a very slight percentage increase in number over the original milk.

Q. Would this hundred per cent be negative, or negligible, under those circumstances, taking the 30,000 limit here of the City of Chicago?

A. It would have been between two and three per cent.

Q. Do you know the methods employed at the Fieldcrest Dairies and in the matter of caring for the machine and so on, after each filling?

A. I have never been there when the machine was washed.

Q. What methods did you employ at Urbana?

A. We used the same procedure as we use on our regular milk bottle machine.

Q. What is that?

A. Rinsing with cold water, washing with a hot alkali water and sterilizing with a chlorine solution.

Q. Is the pick-up any more on this machine than on the machine filling glass bottles?

A. No, sir.

736 Q. Do you know of any other or better method for cleansing the machine after this filling operation other than this rinse you have just described, the cold water and the hot alkali?

A. I don't know of any better method, or we would be using it.

Q. Is the Ex-Cell-O on which you performed these various tests with the paper bottle so constructed that it can be readily cleaned with regard to its measuring, this device on the quart and pint measuring, is that an automatic machine in that respect?

A. Yes.

Q. Is the device used on the glass bottle filler an automatic device?

A. It is.

Q. They are both automatic?

A. That's right.

Q. When anything happens to the machine that is irregular, during the filling process, what happens then, when something gets out of kilter while the machine is filling a quart or a pint bottle of milk?

A. We never had that experience.

Q. Do you know what happens to the machine from a construction basis?

A. It stops immediately, that is, the Pure-Pak Machine.

737 Q. That is the Ex-Cell-O Machine filling the Pure-Pak Container?

A. That is right.

Q. Mr. Schaefer asked you concerning paraffin chipping and you mentioned about slivers chipping off.

A. Yes.

Q. Is there any health problem there?

A. I would not so consider it.

Q. Is there any health problem presented concerning this matter of bulging about which he asked you?

A. About bulging?

Q. Yes.

A. No, sir.

Q. With regard to the reaction upon inquiry you made by circularizing a questionnaire to the consumers; what per cent of the consumer reply was favorable to the use of the paper?

A. Ninety-one per cent.

Mr. Schaefer: That is objected to.

Mr. Gariepy: You asked about it.

Mr. Schaefer: It was ruled on, upon an objection this morning.

The Master: I sustain the objection.

Mr. Schaefer: Was there an answer to the question?
738 (Discussion off the record.)

Mr. Schaefer: Read the answer.

(Answer read by the Reporter.)

Mr. Schaefer: I move to strike the answer.

Mr. Gariepy: He asked him about the cream line this morning and the transparency of the milk in the paper container as compared to the glass, and the witness answered where the cream line was and what was the effect of it and why it was there.

The Master: I sustain the objection to it at this time.

Mr. Schaefer: I move to strike the answer.

Mr. Gariepy: Let the record show that I propose to prove by this witness, if allowed to answer the questions, that after using the paper containers for sixteen months in Urbana and Champaign, at the University Creamery, and after presenting a questionnaire to the consumers, that 91 per cent replied favorably to the questionnaire.

Q. Both glass and paper were being used there in your dairy?

A. Not with it.

Q. Glass milk containers were used at different times, with paper containers?

A. Not with it, but alternating.

739 Q. These inquiries were presented after various uses of each?

A. That is right.

Q. You testified you did not consider the paraffining

process one hundred per cent perfect. Do you consider the sterilization process in the glass bottle one hundred per cent perfect?

A. No, sir.

Q. Does that paraffining process also apply with regard to containers housing cottage cheese and butter, is that paraffining process one hundred per cent perfect?

A. No, sir.

Q. Now, with regard to waterproofing, do you think there is room for improvement of that thermoplastic material used?

A. That has not been proven. They are working on that, now.

Q. What is one objection to that, in the use of the paper milk bottle?

Mr. Schaefer: I object.

Mr. Gariepy: You went into it.

The Master: I will let him answer.

Mr. Schaefer: I object to it.

Mr. Gariepy: Well, you went into it.

740 The Master: Go ahead. I have ruled. Let's have no colloquy.

The Witness: Will you re-state the question?

Mr. Gariepy: Q. What are the objections to the thermoplastic coating other than this paraffining?

A. I don't think I can answer the question.

Q. I am referring to that type that is put on bottles of medicine, which is transparent, hard, heavy material, that you can see the cork through, and it is glued, sort of stuck on.

A. I don't think I can answer that.

Q. Do you consider this absorption that Mr. Schaefer asked you about as presenting any health hazard?

A. None whatsoever.

The Master: If there is absorption, with a two way channel there, if there are any germs in the paper they are likely to go through?

A. There is a possibility that they would, but our work does not show that there is any bacteria in the container itself.

Mr. Gariepy: Q. That is in the paper board?

A. Yes.

Q. What about in the filling process, is there leaking in.

the filling of the glass bottle, in the ordinary dairy, where they use glass milk bottles?

741 A. The bottles often break in the filling process and some of them, of course, are chipped around the neck, which permits leaking later on.

Q. Is there leaking when the stopper is put on by this automatic machine?

A. Yes.

Q. Is there any source of contamination in the Ex-Cell-O Machine itself, contaminating to the paper board or the paraffin or the milk?

A. None.

The Master: What do you mean, the filling machine?

Mr. Gariepy: The machine that is used to fill the Pure-Pak Container.

The Witness: None other than the slight pick-up I have already discussed, that is in the pipe lines and in the tank.

Mr. Gariepy: You may cross examine. That is all.

The Master: Q. About the absorption you are talking about, just carrying that a little bit further, if the absorption exists to such an extent that it shows itself in beads outside of the container, then if there are any germs on the outside they might go back into the container, wouldn't they?

A. I can best answer that by telling you of an experiment in which we took the container, as filled with milk, and submerged them in prodigiousos for forty-eight hours and washed them off on the outside and opened them up and found no prodigiousos in the milk.

Mr. Gariepy: Q. Which proves what, concerning absorption?

A. That there is nothing passing from the outside through the wall into the milk.

Mr. Gariepy: That is all, Master.

Mr. Schaefer: Q. You said there were no bacteria found in any of the containers. You didn't mean that, did you?

A. What is that?

Q. You said you found no bacteria in any of the containers.

A. Any of the containers?

Q. I think it was said inadvertently, you said that.

A. Just now, do you mean?

Q. Yes.

A. Speaking of this prodigiousos?

Q. I don't mean just now, I mean in answer to Mr. Garipey's inquiries.

A. May be so.

Q. You have found bacteria in the paper containers?

743 A. Yes, I have found a few.

Q. You did work jointly with Dr. Prucha?

A. Yes, sir.

Q. What was the dividing line between the work done by you and the work done by Dr. Prucha?

A. I assisted him on some of the bacteriological work which I have already referred to. Some of these physical tests he did not assist me any at all.

Q. The consumer reaction?

A. He didn't work on that.

Q. He was not interested in that?

A. No, sir.

Q. You did that?

A. Excuse me—the ones I referred to—he studied some consumer reaction in Detroit on his own hook.

Q. Are you a bacteriologist?

A. I have had training in bacteriology, but my title is "Dairy Manufacturer". Dr. Prucha is our bacteriologist.

Q. In general, Dr. Prucha did the bacteriological work?

A. He is the senior there on this treatise which we are preparing.

Q. You were primarily interested in the consumer reaction?

744 A. My main responsibility was in physical tests and in the consumer tests. I was interested in the whole proposition.

Mr. Schaefer: That's all the questions I have, Doctor.

Mr. Garipey: No further questions.

The Master: That is all, Doctor.

(Witness excused.)

(Discussion off the record, in reference to some gallon glass jugs.)

Mr. Rall: An inquiry develops, that there is no assurance that these large gallon containers do come from within the limits of the City of Chicago.

(Thereupon, the further hearing in the within cause was continued by the Master without specific date.)

• • (Caption) • •

Wednesday, September 6, 1939,
10:30 o'clock a. m.

Met, pursuant to adjournment.

Present:

Mr. Gariepy, Mr. Rall, Mr. Schaefer, Mr. Horan.

746 The Master: When you are ready, you may proceed.

Mr. Gariepy: The record ought to show that Mr. Harry C. Fisher is being returned to the witness stand on request of counsel for the defendant, for the purpose of further cross examination.

H. C. FISHER, a witness called on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Cross-Examination (Continued) by Mr. Schaefer.

Q. Mr. Fisher, in what form is the paper used in the manufacture of paper blanks received at the Gardner-Richardson plant?

A. Sheets, it is received in the form of sheets. They are piled up on a wooden flat and then banded down with steel bands, with a wooden top over the top of the sheets, and the bands go around the top of the sheets, down the sides and underneath the flat, being criss-crossed, that is, a couple of bands in each direction across the sheet, and lengthwise of the sheet, and underneath, of course, the pile of sheets is protected by wrapping, paper wrapping, around the entire thing.

Q. How large are those sheets?

747 A. The sheets of which the blanks are made vary in size. It would be around 30 inches one way, 24 or 30 inches one way and 50 inches or 40 inches the other way.

Q. And how high are they stacked up?

A. They will be stacked up a distance about, I would say, 3,000 sheets, or about four and a half to five sheets tall.

Q. And how do you receive those? By rail?

A. They come in by rail.

Q. And then you truck them in?

A. Yes, sir. They come off of the railroad box cars and are dragged into the plant on what we term a dolly, which is just a four-wheel device which slips underneath the flat, and the men can pull it into the storeroom.

Q. Now, that paper, after it comes into the plant, is stored until it is ready to be processed by the Gardner-Richardson Company; is that correct?

A. Yes, sir.

Q. Where is it stored?

A. In a warehouse, that is, part of the building in which the conversion occurs.

Q. Will you describe that warehouse, please?

A. The warehouse has a concrete floor. It is a 748 brick, concrete structure throughout.

Q. How large is it in space?

A. There are a number of different rooms. I would say some of them are a hundred feet long and fifty feet wide. Others are various sizes.

Q. What else do you store there?

A. Paper board.

Q. Is that all?

A. That is about all, yes, sir.

Q. Nothing else?

A. Well, there might be some rolls of kraft paper, used for wrapping this, that, or the other, or some twine, or paraffin, something of that nature, but that is about all.

Q. How long are the stacks of paper stored there before they are used?

A. That depends entirely upon the rate at which the orders for the product are coming in. They might be there for weeks, and then again they might be there for a matter of hours or days. It is quite impossible to tell.

Q. Now how long an interval of time elapses between the printing of the container and the gluing of the container?

A. The general procedure followed is to print one day, to cut and score the next day and to glue the third day.

Immediately following the gluing operation the blanks 749 are packed and held for shipment to the customer.

Q. Where do they go after printing?

A. After printing they are just transferred from one press to another, which is from one room to another, so to speak, in the same building.

Q. They remain there until they are ready to be scored?

A. Yes, sir.

Q. Where are they kept during the interval between scoring and gluing?

A. They are kept at that time usually right in the same room in which the scoring occurs or they are parted simply by a door into the adjacent room, where the gluing occurs.

Q. Now, will you describe the room where the printing and scoring occurs?

A. That is much the same as the warehouse. It is a large concrete brick building, with the usual steel type windows in the walls; an enormously big thing.

Q. Of what material are the walls made?

A. I think they are brick. I never paid much attention to that.

Q. Now, will you describe the operation of the printing press?

A. In the printing press the type used for these Pure-Pak blanks, the machine comprises a movable bed or 750 flat bed, so called, upon which the printing form or type is mounted, on a horizontal plane. On one end of that movable bed is the equipment, comprising rolls, a smoothing plate and so on, on which the ink is deposited and rolled out, and after the ink is rolled out one of these ink applying rolls then transfers the printing ink to the surface of the printing plates; simultaneously, the mechanical equipment feeds the sheet into the end of the printing press, where it is grabbed by fingers, and it revolves the printing roll, which is some three or four feet in diameter, and it is timed to bring the sheet into contact with the printing plates, as the two come together, and then a mechanical device takes the sheet which has been printed, with the printed side up, and brings it to the opposite end of the printing machine, where the sheets pile up one on another.

The Master: Off the record, please.

(Discussion had off the record.)

Mr. Schaefer: Q. How are the sheets fed into the press, Mr. Fisher?

A. The sheets are fed into the press mechanically, by devices, comprising a blast of air, which impinges upon the outside edge of the pile of sheets and separates one from another, and then mechanical fingers move in and 751 actually grab hold of the end of the sheet and pull it into the mechanism which feeds it further into the press itself.

Q. When the sheets come to the end of the printing press and come off of the press, what happens to them then?

A. At the end of the press the sheets fall one upon another, and gradually build up into a pile. Simultaneously, the pile keeps sinking down, through mechanical means, so that the top portion of the pile is always of the same height.

Q. Then what happens?

A. That completes the printing process.

Q. Then what happens to the sheets?

A. Following that, they are taken in charge by crews of men, who lift off a large part of the sheets on to—pardon me, I am getting ahead of myself.

At that stage of the game, after the sheets have piled up to the required height that the equipment allows them to be handled, they are taken off of the press, that is, the flat upon which they pile is moved over by means of another dolly to a different flat, so that the wooden thing upon which the sheets pile up can be inserted and the pile of sheets thus printed is held for running through the 752 cutting and creasing press.

Q. How high do these piles run?

A. Those piles would be about two feet or three feet. They vary somewhat, as a matter of convenience.

Q. Now, with respect to the printing room, where are the washing and toilet facilities?

A. There is a main room for that, which is some 150 or 200 feet away.

Q. It is on the same floor, is it?

A. Yes, sir.

Q. There is just one lavatory in the plant?

A. They are scattered all over the place. There are many of them.

Q. But that is the one used by those men?

A. Sir?

Q. The one used by those men is in the location you describe?

A. Yes, sir.

Q. What other operations are carried on over in the room where the sheets are printed and scored?

A. No other operations are carried on there. The scoring, of course, is done in a second room, which is adjacent to the first one I just mentioned, and in that room there is a certain amount of gluing equipment for different kinds of cartons. There is also some paraffining equipment used

for an entirely different kind of carton, but that is a
753 good many feet away.

Q. These particular containers are glued in a separate room from the room in which they are printed?

A. Yes, sir.

Q. Is the machine used for gluing these blanks used for any other purpose?

A. No, sir.

Q. On your direct examination you testified as to certain laboratory tests or the results of those tests. Were those tests run on the paper before it was printed, scored and glued, or afterwards?

A. We do both. We run the test—

Q. I am interested in the ones you testified to on your direct examination.

A. Those tests were run on the board itself.

Q. As received by you?

A. Yes.

Q. You did not testify to any tests as to the printed, glued blank, did you?

A. I don't recall that I did, but that is a test that we do carry out.

Q. How many tests do you run on the finished blanks?

A. Our rule is to run daily one test on each kind of finished blank.

Q. What do you mean by each kind?

A. We have a number of different customers. Each has different sizes and kinds of containers. So it would
754 be one of each kind for each customer.

Q. You do not mean you run one quart blank and one pint blank.

A. Something of that nature, yes.

Q. Or do you mean you would run each customer's blanks?

A. We strive to run one quart—let me explain it this way: If a customer is getting some quarts and pints used for different purposes, we will run one of each, so far as possible.

Q. What is your rule with respect to tests on the paper coming into the plant?

A. One sheet to a load.

Q. For what kind of a load?

A. That is a load that will have about 2,000 or 2,500 pounds on it.

The Master: Q. One sheet is all you will test?

A. Yes.

Q. What do you test it for?

A. Bacteriological test, physical test, strength, and things like that.

Q. What else?

A. Things like that, I said, stuff like that.

Mr. Schaefer: Physical strength, I think, is the phrase you did not catch.

The Master: Q. All you do is simply print and score and glue, isn't that right?

A. We make paper, too, incidentally, but I am not 755 speaking of that.

Q. I would like to find out what is your interest in the bacterial content of the paper?

A. We want to be certain that we are not going to print any paper that is not right.

Q. One sheet out of about how many sheets would you say you make the test on?

A. Two thousand to three thousand.

Mr. Schaefer: Two thousand to three thousand pounds you said, Mr. Fisher.

The Witness: It happens that a sheet weighs about a pound, too.

Mr. Schaefer: I see.

The Witness: Now, it is correct to do such a thing—

Mr. Schaefer: Just one minute. Do you mean a sheet of the size you described, of this paper, weighs a pound?

The Witness: Yes, sir, approximately a pound, yes.

The Master: Q. What kind of a container? A quart container?

A. No, sir, that is the sheet before printing.

Mr. Schaefer: A sheet 30 by 50 inches, the witness testifies weighs about a pound.

The Master: Q. You sell the containers, don't you?

A. Yes, sir.

756 Q. All you do is buy the paper board from someone else and then you go ahead and sell the containers?

A. We have made this kind of paper, too, but generally we buy it and then print it and cut it and score it.

Q. But your primary business is merely to sell the containers to the milk companies, is that right?

A. In this instance, yes.

Q. What?

A. In this instance, yes, but we are also paper manufacturers.

Q. Does most of your business with reference to these containers for milk consist of buying a paper ready made and simply making the paper up into containers, or does most of your business consist of making the paper also?

A. Up to the time I testified before, we had always bought the paper. Now we are doing some of the manufacturing of the paper, too.

Q. But most of it is still merely preparing the paper, that is, putting it together and printing it after you have bought it from someone else?

A. Yes, sir.

Mr. Schaefer: Q. Are you manufacturing any of the paper used in the containers at issue in this case?

A. We are now, yes.

Q. When did you begin doing that?

757 A. A few weeks ago.

The Master: Q. Is there any reason for starting that practice?

A. Yes, there is a reason. Of course, the economics of the thing would change as time passes, and also it gives us an excellent control of the whole process from beginning to end. Paper making, of course, is a continuous thing, involving the handling of tons and tons of material at a time. By doing that in one of our departments and knowing exactly what goes on there, it insures what is happening with the finished stock as we receive it for converting, it being still more under our own control.

Q. The paper manufacturing operations are carried on in the same building?

A. It is in an adjacent building, right across the railroad track, I would say a distance of about a hundred feet or so.

Q. Up to the time of a few weeks ago when you began making paper board for these paper containers, had you made paper board for paper milk containers before?

A. We had made a number of experimental runs, but nothing in production.

Q. Nothing for commercial use?

A. No, sir.

Q. And the factors that induced you to make that
758 shift were largely economic factors?

A. I would say so, yes, sir.

Q. Did that involve extensive changes in your paper manufacturing plant?

Mr. Gariepy: I am going to object to that, Master. 1

cannot see where that has any bearing whatsoever on the issues of this case, whether they had changes in the economic situation or the finances?

Mr. Schaefer: Here is the answer right here. When Sanborn was testifying—I read his testimony last night—there was an effort made to restrict me on my cross-examination of Sanborn to the Cherry River Paper, on the ground that that was where the paper involved in this suit was manufactured, and I contended, and you sustained me at that time, that economic factors would determine whether or not a mill would manufacture this type of paper or some other type of paper. That is borne out right now.

The Master: I don't know just what you mean.

Mr. Schaefer: I mean this: I cross-examined Sanborn as to whether or not a mill could shift the production of paper to some other type of product, to prepare for paper milk containers. Counsel for the plaintiff objected, on the ground that I should be restricted on cross-examination 759 to the conditions of the Cherry River paper.

The Master: Off the record.

(Discussion had off the record.)

Mr. Gariepy: Adding to my objection and the cause for my objection, the plaintiff is purchasing paper board or paper containers made from the board of the Cherry River Paper Company only and not from any paper board made by Gardner-Richardson Company at its plant in Middleton, Ohio, and therefore I object to the cross examination concerning the way Mr. Fisher's company is making paper board.

The Master: Now, do you desire to continue with that line of examination, Mr. Fisher.

Mr. Fisher: I don't remember what the pending question was.

The Master: Off the record again, please.

(Further discussion had off the record.)

The Master: Go ahead.

Mr. Schaefer: Let me ask the witness one other question first.

Q. Is any of the paper manufactured by the Gardner-Richardson Company used in the Pure-Pak container sent to the Fieldcrest Dairies?

A. No.

Q. Are you competent from your course with Dr. 760 Sanborn to identify the nature of the bacteria found in the paper?

A. I think my competency for that sort of work is confined to telling how many bacteria are present in the paper.

Q. And the same is true as to the man who actually performs the tests?

A. Well, he is more thoroughly trained in that than I am, because he studied some of it at the school, even though he did not graduate.

Q. You do not know of your own knowledge whether or not he is competent to make an identification of bacteria?

A. As a general thing, no, but in some cases I think he could do it.

Q. How does it happen that you first began to make tests as to the bacterial counts on the paper board in April, 1939?

Mr. Gariepy: I object to that. He has been over that on direct examination when he was here before. He started to tell at that time why they set up their laboratory for making the tests.

The Master: There is no reason why he cannot cross examine him on that.

Mr. Gariepy: He did cross examine him on that.
761 This is repetition.

The Master: You said on direct examination.

Mr. Gariepy: No, I mean on cross examination.

The Master: I will let him answer.

The Witness: A. It so happens we were getting into this type of work more and more, so we decided to set up a laboratory to do that kind of work. By the time the equipment was purchased and received and the routine established, it came to that particular date.

Mr. Schaefer: Q. What is the name of the man who you testified was the company doctor?

A. I don't recall that I testified as to the name of the company doctor.

Q. No, you did not. That is what I am asking you.

A. I don't know what his name is. They have a large number of physicians on call, so that anyone can be obtained at any time by the registered nurse who is there all the time.

Q. In the event of an accident or an emergency?

A. Yes.

Q. He comes to the plant only when he is called there?

A. That is it, yes.

Q. On your direct examination you said that the Gard-

ner-Richardson Company had a completely equipped 762 hospital. Will you describe the equipment in that hospital?

A. Well, it comprises a waiting room, combined office and hospital room, I would term it.

Q. What is in the hospital room?

Mr. Gariepy: I am going to object to that, Master, what is in the hospital room. He can be here all day wasting time and money telling about the things that are in the hospital room, X-ray machines, boiling and sterilizing equipment and all that stuff. What has that got to do with this lawsuit?

The Master: Let him briefly tell.

Mr. Gariepy: Make it brief, Mr. Fisher.

The Witness: A. I would say it has the usual things you see in any first-aid hospital; stretchers, an operating table, heat lamp and couch and things of that kind, a case of medicine, sterilizers and things of that sort. I really have not given much attention to it. That is a function of the medical department.

The Master: Q. How big a room is it, did you say?

A. I would say it is about twenty feet long and ten feet wide. Something of that nature.

Q. It is not really a hospital then; it is simply a room that you use for the doctors?

A. It is more or less a first-aid room, yes.

763 Q. Is a doctor regularly in attendance there?

A. As he is called, yes.

Q. As he is called?

A. Yes.

Q. That is the question I asked you. Is he regularly in attendance there all day long?

A. No, sir.

Mr. Gariepy: Mr. Fisher, just answer the questions as briefly as you can.

Mr. Schaefer: That is all, Mr. Fisher.

Redirect Examination by Mr. Gariepy.

Q. Mr. Fisher, you were asked on direct examination on July 5, 1939, when you were here before, concerning the matter of ink penetrating into the paper board. Have you performed any tests since July 5, 1939, concerning the penetration of ink in this board?

A. Yes, sir.

Q. First let me ask from whom do you buy the inks that are used on the plaintiff's containers here, in the various colors that are used, for the quart milk bottles, cream bottles and so on?

A. The Hilton-Davis Chemical Company.

Q. Do you buy ink from any other place?

A. Sir?

764 Q. Do you buy ink used in the plaintiff's containers from any other source?

A. No, sir.

Q. What was the test that you performed concerning the finding out or ascertaining of the amount of penetration of ink into the paper board?

A. The test can be divided into three parts. In the one instance the printed container is torn in such a manner that the tear is on the bias through the thickness of the sheet, and then by visual examination it can be seen that the ink is confined to the upper portion of the sheet.

The second type of test comprises taking a piece of the printed board and compressing it between the hands until the various plies separate one from another, in which case each separate ply is examined visually to see whether ink has penetrated. In other words, if it is a red ink you can see red down through the sheet, if it has penetrated. Then a more elaborate test comprises taking the printed top portion of the sheet, which is stripped off, putting it into a test tube, with a quantity of glacial acetic acid and heating that. The glacial acetic acid acts as a solvent to dissolve the vehicle of the ink. It releases the pigment which colors the glacial acetic acid.

765 by taking portions of the sheet of board throughout the sheet and performing this same test with glacial acetic acid, no characteristic coloring is obtained, which is an indication, of course, that there has been no penetration of ink below the top surface of the sheet.

Q. Have you ever experienced any chipping off of the ink on any of the paper containers printed here for the plaintiff?

A. No, sir.

Q. Have you ever had any complaints concerning ink chipping off, on any of the colors, red, green or yellow, used on the plaintiff's containers?

A. No, sir.

Mr. Gariety: That is all, Mr. Fisher.

Mr. Schaefer: Just a moment.

The Master: Are you through?

Mr. Schaefer: No, I am not. I want to go ahead.

The Master: Proceed.

Recross Examination by Mr. Schaefer.

Q. Do you buy ink from anyone other than the Hilton-Davis Company, Mr. Fisher?

A. For the Pure-Pak containers, no.

766 Q. Do you manufacture any other milk containers there.

A. Yes, sir.

Q. Do you buy the ink for those containers from the Hilton-Davis people?

A. Yes, sir.

Q. Do you buy all of your ink used for printing milk containers from the Hilton-Davis Company?

A. Yes.

Q. These tests that you described, each of them is effective to determine whether or not the pigment, that is, the coloring matter in the ink, has penetrated into the paper, and how far it has penetrated, is that correct?

A. Will you please read that question again?

(Mr. Schaefer's last question was read by the reporter as above recorded.)

A. Yes.

Mr. Schaefer: Q. Now, will you explain how those tests indicate the extent to which the vehicle in which the pigment is suspended has penetrated into the paper.

A. If the vehicle has penetrated into the paper, since it has a dark brown color, it can be seen.

Q. The vehicle itself has a dark brown color?

A. And I have known of an instance of printing ink of the type used on paper board in general or on 767 paper milk container board in particular where the pigment will separate itself from the vehicle to such an extent that the vehicle would appear in the sheet, without the pigment going along with it. Such penetration as does occur is confined to a matter of a thousandth of an inch or perhaps two thousandths of an inch, which is much less than the thickness of one of the plies of paper that is formed up in making the complete sheet.

Q. Of what is the vehicle composed?

A. It is largely linseed oil, varnish, so-called.

Q. And drier?

A. And a drier, yes.

Q. What color is the drier?

A. It looks quite like the varnish itself. It may be a little darker.

Q. It depends, does it? You use different kinds of driers, I suppose, in different colored inks or different types of ink?

A. Yes, sir.

Q. Those tests that you described, however, are all limited to detection by visual means of the extent to which the ink or any of the component parts of the ink have penetrated into the paper?

A. I would not say that. The first two are, but the third test is one based upon releasing the pigment from the vehicle.

768 Q. But still in order to determine whether or not there has been pigment there to be released, you would still rely upon a visual examination for the coloring of your sheet?

A. Yes, sir.

Mr. Schaefer: That is all.

Mr. Gariépy: That is all.

(Witness excused.)

Mr. Gariépy: Mr. Taylor.

CLINTON L. TAYLOR was called as a witness on behalf of the plaintiff, having been first duly sworn, testified as follows:

Direct Examination by Mr. Gariépy.

Q. What is your name?

A. Clinton L. Taylor.

Q. And your address?

A. 6199 Cambridge Avenue, Cincinnati, Ohio.

Q. What is your business or occupation?

A. Chemist for the Hilton-Davis Company.

Q. What schools did you attend and study at in order to become a chemist?

A. A general high school course and the University of Cincinnati.

769 Q. How long have you been connected with the Hilton-Davis Company of Cincinnati as a chemist?

A. Since 1926.

Q. What are your duties there?

A. My duties are to supervise analytical work and carry on research work.

Q. Have they a laboratory for the purpose of performing research work?

A. They do.

Q. What does the Hilton-Davis Chemical Company manufacture?

A. They have ten departments. They manufacture printing inks, dyes, pigments, varnishes, esters, alcohols, sizing. That is practically all.

Q. Does the Hilton-Davis Company sell ink to the Gardner-Richardson Company?

A. We do.

Q. How long have you been doing that?

A. I will have to make an approximation. I will say since 1930, to my knowledge.

Q. Are you acquainted with the chemical constituents of the ink that is used in the printing of the legend on the Pure-Pak containers of the plaintiff, Fieldcrest Dairies, here?

A. I am.

Q. Are you acquainted with the formulas that are used in the preparation of said ink?

A. I am.

Mr. Gariepy: Mr. Schaefer, to save time might we not agree that the formulas I gave you some time ago are the true and accurate formulas, or do you want this man to go into detail as to them?

Mr. Schaefer: No. However, you haven't gotten them in the record yet, if you want them in.

The Master: Off the record.

(Discussion had off the record.)

Mr. Gariepy: Mr. Reporter, will you mark this document Plaintiff's Exhibit 45 for identification.

(The document referred to, containing formulas for the preparation of ink manufactured by the Hilton-Davis Chemical Company for the Gardner-Richardson Company, was thereupon marked Plaintiff's Exhibit 45 for identification.)

Mr. Gariepy: It is agreed by and between counsel that

for Plaintiff's Exhibit 45 will be substituted a list containing the same constituents with regard to the formulas here in question. This is offered for the purpose of showing the formulas used in the preparation of the ink used on the Fieldcrest Dairies containers in question here.

Q. Mr. Taylor, have you performed a test during 771 the month of June, 1939, with regard to the amount of ink, if any, that is absorbed from a Pure-Pak container, unparaffined, placed in a quart bottle or gallon bottle of milk?

A. I did.

Q. Will you describe to the Master what you did in performing that test and what the result was?

A. We received the standard cartons containing the ink in question, the Dean green ink.

Q. Is that the same Dean green ink referred to in Exhibit 45?

A. Yes, that is the same Dean green ink referred to there.

The Master: Q. These are containers received from whom?

A. These are containers received from the Gardner-Richardson Company, unlabelled, and brought over to me to be tested, to see what effect and how much if any ink might be absorbed by the milk. To make the test very severe we took the carton which had the most ink—

Mr. Garipey: Q. Did you do this yourself, Mr. Taylor?

A. Yes, sir.

Q. Go ahead.

772 A. To make sure that the test was carefully carried out, I had an assistant to check all weights. We took the green carton, which has the most ink and the highest percentage of metal in the printing ink, and cut that carton into small pieces, put that carton down into fresh ink, and also took—

Mr. Schaefer: Fresh what?

The Witness: Fresh milk. I beg your pardon.

A. (Continuing.) —and put that in the ice-house for 24 hours, and along with it a fresh bottle of milk, a blank, of course. Then that was brought into the lab and a sample taken out and the bottle put back for 24 hours more, and then it was brought in, and that was a 48-hour sample. Then the bottle was put back and brought back 24 hours

later for a 72-hour sample. That gave us three samples, a 24-hour, a 48-hour and a 72-hour sample.

Now, 100 cc. of each one of those samples, which is approximately three ounces, was drawn from the blank, from the 24, from the 48 and from the 72, giving us four tests to be run.

Now, these tests are run according to the Official Association of Official Agricultural Chemists, which is a standard among all approved chemists.

773 We evaporated this milk to dryness; then put the evaporating dishes into a furnace and burned them down at a high heat, to burn out all carbon.

Now we have the sample in the condition of an ash. Then we added 15 cc. of hydrochloric acid, to redissolve any lead which might have been absorbed by the milk.

This acid, containing all soluble salts, was then treated with ammonium acetate, acetic acid—I don't have to go all over that, do I?

Mr. Gariepy: Q. Go ahead.

The Master: Tell us what you did.

A. : And sodium hydroxide and copper sulphite; and then filtered. Then we take the samples and test them for lead, with a very sensitive indicator, namely, diphenyl-carbazole. This is the most sensitive color indicator for lead.

Now, we have the four samples with the indicator in them. To tell whether there is any lead in there or not, we make up standard solutions containing known amounts of lead and add the same indicators to these standard solutions and compare these standards with our four samples.

The results of our tests showed there was no lead
774 absorbed by the milk from the ink after 24, 48 or 72 hours.

Mr. Gariepy: Q. Were these cartons paraffined?

A. No, these cartons were not paraffined. The condition was the worst condition we could possibly have.

Q. Have you had occasion since performing that test, Mr. Taylor, to perform tests with regard to the lead content in milk bottle caps?

A. I have.

Q. Which I sent to you from the City of Chicago, from Westbrook Farms Dairy, Inc., 923 North Wolcott Avenue, Chicago?

A. I have.

Q. And how many of those caps did you receive on September 1, 1939, from us and perform comparative tests concerning the lead content in those green caps on?

A. I ashed twelve of those caps.

Q. And what did you find in ashing twelve of those caps, with respect to the lead content?

A. I found these caps contained the same lead pigment as used in that type of green ink.

Q. Have you those caps with you?

A. Yes, sir, I have the remainder of the same caps.

775 Mr. Gariepy: Mr. Schaefer, can it be agreed that this dairy is selling milk and using these caps in the city of Chicago today? I purchased those caps myself out of the dairy and got the buttermilk from the Brevoort Cafeteria or Hotel. If you want to check up with the office or call up there, you may.

Mr. Schaefer: We will agree.

The Master: What was the result of the analysis of these caps?

Mr. Gariepy: Q. Did you give the result, Mr. Taylor?

A. I found that this ink was made with a lead pigment.

The Master: Q. How does that differ from the ink that was used on the Pure-Pak container?

A. There is no difference, except a slight difference in shade. The basic ink is the same.

Q. Was the test that you made on these caps the same test as you made on the Pure-Pak container?

A. No, sir. I tested for lead in the ink in this instance.

Q. You just tried to see if there was any lead in the ink?

A. If that is a lead ink.

776 Q. But you didn't make any test to see if the ink or the lead got into the milk?

A. That is right. I just tested these for lead.

Q. You wanted to see if there was lead there?

A. If that was a lead pigment.

Mr. Gariepy: Q. Do you know whether there is any difference in the quality of the ink used on these Westbrook Farms caps from the ink used on the Pure-Pak container with the Dean green ink, so-called?

A. Those are practically the same inks. We can match them up with our Dean ink and there would hardly be any difference.

Q. Are these green caps paraffined that you made the check on?

A. They are just like that (indicating caps).

Mr. Gariepy: Look at those and see if you cannot agree that they are not paraffined, Mr. Schaefer.

Q. Is this ink used on the Pure-Pak container, called Dean green in Exhibit No. 45 formula, soluble or insoluble?

A. Insoluble.

Q. And why is an insoluble ink used, Mr. Taylor?

A. An insoluble ink is the only type of ink that Gardner-Richardson could print with.

The Master: Q. What do you mean by that?

777 A. What do I mean by insoluble?

Q. No; you say that is the only kind of ink that they could print with. Why couldn't they use soluble ink to print with?

A. Well, Master, that is a question of soluble ink and insoluble ink that means two things. This writing fluid we term a soluble ink. We know that cannot be printed, this writing fluid.

Mr. Gariepy: Q. Such as the court reporter has in his pen?

A. That is right. In the printing trade we call a soluble ink a writing fluid, whereas a printing fluid is similar to a paint; it is insoluble, and because it is insoluble it has the qualities of a paint.

The Master: Q. Then you would say that all ink which is used for printing is an insoluble ink?

A. All ink which is used for printing in the carton business is an insoluble ink, and 90 per cent of all other ink is insoluble.

Q. What do you mean by insoluble?

A. The pigment is insoluble in its vehicle, no matter what the vehicle is, whether the vehicle is water or linseed oil or turpentine; the pigment must be such that it cannot bleed in that vehicle. We call that bleeding. If there
778 is any bleeding we have to throw the pigment out; it is not acceptable.

Q. What do you mean by bleeding?

A. By bleeding, for example, if you should print on this card and this red would bleed off on to the side, we call that bleeding, just like it bleeds into a blotter.

Mr. Gariepy: Take this pen and push it down, and you can see what he means, Master.

The Witness: You see, by pushing that pen, the ink bleeds out.

The Master: Q. You mean, it spreads?

A. It spreads, that is right.

Q. It does not give you a clear-cut impression or line, is that it?

A. It bleeds into the vehicle. When the pigment is stirred into the varnish, the varnish must not dissolve the pigment into itself. If so, then you call it a dye. If it bleeds, then you have a dye; you no longer have a pigment.

Mr. Gariepy: Q. Is this same type of lead pigment ink used on other food cartons and containers?

A. It is the very same ink that is used on practically all food containers or cartons.

Q. Name some of them that you know it is being 779 used on?

A. I have three right here that I picked up, that you all use. There is the same type of ink used on that.

Q. Pointing to three packages of gum, Wrigley's Doublemint gum, all wrapped up, and Spearmint and Juicyfruit?

A. We make that ink on those.

Q. What other food products are sold in containers that use the same ink as is used on the Dean green here?

A. Bread wrappers, oleomargarine cartons, butter cartons, cracker boxes, soaps, soap cartons. I think that covers it pretty well.

Q. By pigment what do you mean, so we understand each other, the pigment in the ink?

A. In the printing and paint trade, by pigment we mean the poison which is insoluble in the vehicle.

Q. That is in the liquid, the varnish and the linseed?

A. The pigment is the material which is insoluble in the vehicle. It is carried in the vehicle. You grind your pigment into your vehicle. Ink consists of two things primarily, the vehicle and the pigment.

The Master: Q. By insoluble, do you mean it will 780 not dissolve?

A. It will not dissolve to any extent.

Q. In that particular vehicle?

A. Yes.

Q. But will it dissolve in some other vehicle?

A. Then it is no longer a pigment. No; it will not dissolve. A good pigment will not dissolve; a first-class accepted pigment will not dissolve in the standard printing ink vehicles.

Q. That is not what I am asking you. Assume that it will not dissolve in the standard printing ink vehicle.

A. Why, yes, you could dissolve it in acid or benzine or gasoline or things like that.

Q. Will it dissolve in milk?

A. No, sir. That is water.

Mr. Schaefer: That is what?

The Witness: That is mainly water, as you know.

Mr. Schaefer: Yes. I didn't hear you.

The Master: Q. This pigment will not dissolve in water?

A. Right. It is precipitated from water.

Q. Will this pigment come out of the ink of which it forms a part when water is applied to the ink?

A. No, sir.

Q. Or when milk is applied to that ink?

781 A. No, sir.

Q. It will stick right with the ink?

A. Yes, sir.

Q. Of which it is a part?

A. Yes, sir.

Mr. Gariepy: Q. Is there such a thing as flexibility in the printing ink itself as used on cartons?

A. All printing inks are flexible, in the carton trade.

Q. And if this ink chipped and fell apart and so on like that, would that ink be suitable for use for printing on food cartons or liquid container cartons at all?

A. The carton would be thrown back to the printer and we would have to make up for the loss. They could not be accepted. They would not go through the folding machines in the first place without knocking the ink off, and that never happens with a good ink.

The Master: Q. What is that?

A. That never happens in good ink. It is merely thrown out. It would never get to the customer.

Q. Does it happen to your ink?

A. No, sir.

Mr. Gariepy: Have you ever had any of your ink chip

so that particles came off in the scoring process or 782 folding process, whatever it may be, in the handling of it from store to store and shelf to shelf, so that you receive the containers back, because the quality of the ink was not flexible enough to resist that force?

A. I have never in the time that I have been in the printing business seen a chipping ink, an ink that would chip.

The Master: Q. In other words, when the ink dries on the paper to which it is affixed or on which it is imprinted, it is not brittle?

A. It is very flexible, rubbery.

Mr. Gariepy: Q. Do the different colors of ink used on the plaintiff's container, red, yellow, pink and so on, differ with regard to lead content?

A. Yes, sir.

Q. Which one has the highest lead content?

A. The greens.

Q. And why is that?

A. Because all greens of this nature are made with lead chromate, contain about 30 per cent lead pigment.

Q. In these tests that you performed on the Westbrook Farms milk caps did you bring with you the results in vials?

A. I did.

Q. And are those the vials before you?

783 A. Yes, sir.

Q. Will you explain to the Master what each one of those vials show, with regard to lead content?

The Master: Of which?

Mr. Gariepy: The green.

The Witness: A. On the green from the Westbrook, I ashed twelve of these tops.

Mr. Gariepy: Q. Westbrook Farms tops?

A. From the Westbrook Farms. I redissolved the lead, then precipitated it with hydrogen sulphide and got a heavy black precipitate, which is the first indication of lead. To recheck this, I redissolved the hydrogen sulphide with hydrochloric acid, neutralized, and reprecipitated the lead with potassium chromate, which is a very sensitive test for lead. The blank vial contains all the reagents.

Q. The vial containing blank, which one is that?

A. This contains distilled water, plus the acids used,

and potassium chromate, to make sure that the reagents did not contain lead. This contains the ash, which is dissolved in hydrochloric acid.

The Master: Q. That is the other vial you are talking about now?

A. Yes. This has the Westbrook precipitated lead in it. You can see the lead.

784 Mr. Gariepy: Show the Master what that is, so he can see the particles.

The Witness: You can see the particles. This is the way it is made (exhibiting vials to the Master).

The Master: Q. One of these looks a little murky.

A. That is a lead, lead chrome.

Q. What is the vial supposed to show?

A. This shows the lead in the Westbrook cap.

Q. What is the first one?

A. This contains the reagents and does not contain any lead.

Q. That is before you put in the Westbrook material?

A. That is right, the Westbrook ingredients.

Mr. Gariepy: Q. With regard to the amount of lead in the various pigments, green and so on, you also performed a test on the Bowman Dairy Grade A milk cap that I sent to you on a day previous, a red one?

A. That is right.

Q. Did that show any lead in it?

A. That showed no lead.

Q. Do you know of any soluble ink that is used on any food container or liquid food container, Mr. Taylor?

A. No, sir.

785 Mr. Gariepy: Cross-examine, Mr. Schaefer.

Mr. Schaefer: I would prefer to defer cross-examination until after lunch, if you can go ahead with some other witness' direct examination.

The Master: All right.

Mr. Gariepy: I would rather you go ahead with this witness, if you can.

The Master: Off the record.

(Discussion had off the record.)

The Master: If you are not ready now to go ahead with the next witness, we can adjourn until this afternoon at one-thirty or two o'clock.

Mr. Schaefer: Whatever is convenient to you.

The Master: What time do you want?

Mr. Schaefer: One-thirty will be agreeable.

The Master: One-thirty. Very well, gentlemen.

Mr. Gariepy: Just a moment. I have got something here that I want to put in, an additional test that he performed, concerning the amount of pigment in this.

The Master: In what?

Mr. Gariepy: In this green, Westbrook green.

The Master: Go ahead.

Mr. Gariepy: Q. Mr. Taylor, I show you a card with a square amount of green ink on it. Did you make 786 this up?

A. Yes, sir.

Q. What is it?

A. That is the milk bottle green used by the Gardner-Richardson Company.

Q. And is that the ordinary depth and thickness used on the container?

A. That is approximately the depth, yes, sir.

Q. And what was your purpose and object in performing a test or in making this test, on the milk bottle green?

A. To show that if we received an order from someone like Westbrook, this is what we would match it with.

Q. Have you matched the Westbrook green with this card?

A. Yes.

Q. And the depth of color indicates the amount of lead or pigment?

A. Not the depth of color. This does not amount to anything, the formula.

The Master: Q. The formula of what?

A. The formula of the Hilton-Davis ink.

Mr. Gariepy: Q. As compared with the Westbrook?

A. As compared with the Westbrook. The formula of the Hilton-Davis ink I know and the quantity of lead in that ink I know. I have tested this Westbrook Farms ink and found it to be a lead pigmented ink. Therefore, 787 any ink matcher, knowing they are both lead inks, would match the Westbrook ink with this Hilton-Davis chrome green ink.

The Master: Q. What for? What do you want to match it for?

A. If we would receive this order from the Westbrook Dairies, it would be matched with this type of ink, which

contains lead, and the Westbrook Dairies has a leaded ink.

The Master: What is the materiality of that, Mr. Gariepy?

Mr. Gariepy: The purpose of showing that is that the Westbrook ink that is now used daily in the city of Chicago, on your unparaffined or unwaxed cap, is the same type of ink and contains the same ingredients as the ink used on the Dean green and the Pure-Pak containers here.

The Master: He has already testified to that.

Mr. Gariepy: Yes, but he matched it up to show the second test of the ink.

The Master: Is that all?

Mr. Gariepy: That is all.

The Master: One-thirty p. m., gentlemen.

Whereupon a recess was taken to 1:30 o'clock p. m. of the same day, Wednesday, September 6, 1939.

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• • (Caption—316) • •

Hearing resumed before Master Grossman at 1:30 o'clock p. m. on September 6, 1939.

The same counsel present.

The Master: Are you ready to proceed with your cross examination, Mr. Schaefer?

Mr. Schaefer: Yes.

CLINTON L. TAYLOR, resumed the witness stand, and testified further as follows:

Cross-Examination by Mr. Schaefer.

Q. Mr. Taylor, you testified as to the solubility, or, rather, the insolubility of the ink put out by the Hilton-Davis Chemical Company.

A. Yes.

Q. Is all ink, or printing ink, of the same degree of insolubility?

A. No, sir.

Q. That is, there are variations?

A. Do you limit that to that used by the Gardner-789 Richardson Company?

Q. No. I mean in printing inks generally?

A. I can not recall of any.

Q. Do you mean every kind of ink that is used for printing is of an equal degree of solubility?

A. Insolubility—in what?

Q. In any medium you want to put it into?

A. Oh, no.

Q. Then, there are variations?

A. Yes. I said that would mean you could dissolve it in gasoline.

Q. No. I mean this—you put two different kinds of printing ink in the same medium for dissolution?

A. Well, now, you don't put a printing ink into anything. The printing ink is the finished product that comes in a can, and that is finished. You don't put it into anything.

Q. Yes, I understand that.

A. Any more than you put a paint into anything.

Q. Let me get back to the original question: There are different kinds of printing inks?

A. Yes.

Q. Made according to different formulas?

A. Yes.

Q. Will inks made according to different formulas 790 have the same degree of insolubility?

A. You are covering a tremendous territory there.

Q. Yes.

A. You realize that?

Q. It isn't important whether I realize it or not.

A. Well, then, I would like to be careful what I say. I will just say that is a question I have never had put up to me. I couldn't say.

Q. What is your opinion?

A. My opinion is, no. My opinion is that most all printing inks, all that I have any knowledge of, all that we make are equal in insolubility.

Q. Now, what is it that makes a printing ink insoluble?

A. There is nothing that makes a printing ink insoluble. What do you mean, insoluble in?

Q. I mean insoluble by any means of testing solubility.

The Master: Let's get together. When you say these are insoluble, what do you mean?

A. The pigment I claim is insoluble—not the ink—I said the pigment.

The Master: The pigment.

A. You see there is a difference.

Mr. Schaefer: Q. Then, is the ink which is put out by the Gardner-Richardson Company insoluble?

791 The Master: The ink or the pigment?

Mr. Schaefer: Q. By the Hilton-Davis Chemical Company?

The Master: Are you talking about the pigment or the ink?

Mr. Schaefer: Talking about the ink, now.

Mr. Gariepy: He just answered that.

The Witness: Insoluble in what? I can dissolve it in gasoline or turpentine.

Mr. Schaefer: Q. Are there types of printing inks employed, whether by the Hilton-Davis Chemical Company or by any other company, which are less insoluble than the ink which you described in your direct examination?

The Master: Insoluble in what? Insoluble in milk or water?

Mr. Schaefer: Insoluble in any medium, I don't care.

Mr. Gariepy: I object to that.

The Master: Overruled.

Mr. Schaefer: Q. All right, with regard to gasoline or anything else.

Mr. Gariepy: Objection.

The Master: Overruled.

The Witness: Must I answer?

The Master: Yes.

792 The Witness: Will you read the question for me? (Question read by the Reporter.)

The Witness: None that I know of.

The Master: Let's get this straight, now. He is making a distinction between solubility of the pigment and solubility of the ink.

The Witness: The ink.

The Master: Now; then—

The Witness: May I say the ink is a pigment, ground in an oil, and if we are talking about milk or water, the solubility is the affinity between water and oil, which, as you know, is practically nil, and the pigment is precipitated out of water when it is washed with water to get rid of any soluble salts, and, therefore, it is free of all soluble mate-

rial. That is your pigment—our pigment—and the pigment is an insoluble material.

Mr. Schaefer: Q. What about the varnish in which you put the pigment? Is that insoluble?

A. That is linseed oil.

Q. Is that insoluble?

A. With gasoline or alcohol.

Q. Is that insoluble in cream?

A. Linseed oil, insoluble in the water portion.

793 The Master: Q. Insoluble in what?

A. Insoluble in the water portion.

Mr. Schaefer: Q. Is it insoluble in cream?

A. I have never had experience with it.

The Master: Q. What is your opinion?

A. My opinion is, no, that it is not soluble.

Mr. Schaefer: Q. That it is not—

A. Soluble.

The Master: Q. In cream?

A. In cream.

Mr. Schaefer: Q. What is the base of your varnish?

A. Linseed oil.

Q. Linseed oil?

A. Linseed oil.

Q. That is a fat?

A. Beg your pardon?

Q. That is a fat?

The Master: A fat—"f-a-t".

Mr. Gariepy: Talk louder.

A. I can hear all right. I just want to be careful. That is a glyceride.

Mr. Schaefer: Q. Has the varnish the same physical composition, the same physical qualities as the pigment?

A. With relation to solubility?

Q. Yes.

794 A. You cover so much territory there when you say "physical".

The Master: Let's make it specific.

A. It is awfully hard for—

Q. Is the varnish as insoluble in milk or water as the pigment, as insoluble?

A. I would say yes.

Q. Well, is it any more insoluble, or less insoluble?

A. Less insoluble, any pigment.

Q. But you would say it is insoluble?

A. I would say it is insoluble.

Mr. Schaefer: Q. Have you made any tests to determine that?

A. No.

Q. What is the composition of the dryer?

A. The dryer is made up of a lead soap, cobalt or manganese soap.

Q. Does that dryer have the same degree of insolubility in milk that the thinner has?

A. Yes, they are tremendously insoluble.

Q. Have you made any tests to determine that?

A. Well, you couldn't manufacture dryer. Dryer is precipitated out of water, you have your materials in solution.

Q. In the same manner as the pigment is?

795 A. Very similar to the pigment.

Q. The test you described this morning on your direct examination was a determination by a chemical process, of whether or not lead had dissolved into the milk; is that a reasonably accurate description of your test?

A. Yes, whether lead had become a soluble salt in the milk.

Q. Did you make any tests to determine whether or not the ink or any component part of it would be released into—could be released—into milk by physical means, as opposed to chemical means?

Mr. Gariepy: I object to that, Master. I think it is going far removed from the question. Physical means—you don't take anything and tear it apart or break it down to find out what there is to it. You can take a glass bottle and break it up.

The Master: What was the question? Read the question.

(Question read by Reporter.)

The Master: I will let him answer it.

A. No. In that case you would just have to take and scrape the material together in the milk—is that what you mean, just physically rub it off?

796 Mr. Schaefer: Q. Physically rub it off, by friction or by bending.

A. You have to rub it off in the milk.

Q. Or by bending?

A. Any way.

Q. Any physical means?

A. Yes.

Q. You made no such test?

Mr. Gariepy: He said "No".

A. No. In my description that is reported.

Mr. Schaefer: Q. That's all right.

A. Excuse me.

Q. What is the smallest quantity of lead detectible in 100 cubic centimeters of milk?

A. Well, we can go down to about, very easily, .0005 millograms.

Q. By the means which you used in the test you described this morning?

A. Yes, that test is tremendously sensitive. Government specifications are .001.

Q. Now, did you make that test to determine whether the amount of lead originally on the container before you performed the test was still there on the container when you got through?

A. No, sir, the carton appeared no different. The 797 test showed there was no lead in the milk.

Q. Yes, I understand that.

A. We assume, therefore, nothing left the carton, since there is nothing left in the milk.

Q. You made no test to determine that?

A. Yes, we tested it for lead.

Q. You made no test of the carton?

A. No.

Q. To determine whether or not the same amount of lead remained on it?

A. No.

The Master: Q. You did not shake these containers, the milk, and portions of the carton, did you?

A. They were not shaken.

Q. No shaking?

A. That is, no agitating.

Q. You put them in?

A. Put them in and let them stand, the same as we fill the cartons with milk. I would like to clear up something.

Mr. Schaefer: Q. Did I understand you—

The Master: Did you want to make an explanation?

A. Yes.

Q. Go ahead.

A. I don't know how much to say. I want to clear 798 up a point. You are not talking about the same material that is on the carton after it is dried.

The Master: Q. What is he talking about?

A. He is talking about fresh ink.

Q. What?

A. He is talking about fresh ink all of the time.

Q. What are you talking about?

A. What we tested was dried ink, it is in an entirely more hard condition, to get that; then when you talk of fresh ink, we talk of fresh ink as something you can pour.

Q. Make a comparison?

A. The difference between a solution of rubber and a piece of rubber tire.

Q. Would you make any comparison between liquid paraffin and dried paraffin?

A. No. There you just solidify something. There is a difference between the skin on top of a paint pail and the fresh bucket of paint. You never can use that skin; it is in a tough condition.

Mr. Schaefer: Q. Have you ever had any complaints at all with respect to any of the ink you have sold?

A. Only in shade, that is our big trouble.

Q. The color of the ink?

A. Yes, that is all. We can take care of anything 799 else before it leaves.

Q. You have never had any experience with complaints with respect to anything else during the period you have been with the company?

The Master: He might have had some complaints about price and things like that.

A. Well, we had that.

Q. Do you know of any complaints about the quality of the ink?

A. The quality of the ink is always the same. Gardner-Richardson have our formulas.

Q. The question is whether you have had any complaints about the quality?

A. Not to my knowledge.

Mr. Schaefer: Q. During that entire period of thirteen years?

A. That's right, that is one reason we were hired to make that ink.

Q. Speaking now, not only about the ink manufactured by the Hilton-Davis Company, but about all types of printing ink, have you ever heard of complaints on account of the solubility of the ink?

A. On the bleeding?

Q. Bleeding?

A. Yes.

800 Q. You have?

A. Yes.

Q. Have you heard of those complaints with respect to ink used in the printing of paper containers for milk?

A. No, because in our organization ink is not made with any pigment which has any tendency to bleed.

Q. I am not talking about your organization. I mean in the industry, generally?

A. You can't say that.

Q. Have you ever heard of those complaints with respect to any complaint on that score, the ink used for printing paper milk containers?

A. No, I haven't. It hasn't come to me.

Q. But you have heard of that difficulty with bleeding, in the industry?

A. That's right, bleeding into the varnish.

Q. In the event there was bleeding, the varnish would carry with it the pigment, would it not?

A. Yes, it would have to.

Q. Are aniline dyes ever used in the manufacture of printing inks?

A. They are.

Q. Do you folks ever use them?

A. We do not.

801 Q. For any type of ink?

A. We do not use them, no.

Q. What are aniline dyes?

A. Well, aniline dyes are coal tar dyes, the most common dyes are red, blue or green, your lipstick or rouges are aniline dyes.

Mr. Schaefer: That is all.

Redirect Examination by Mr. Rall.

Q. If ink is soluble so that it does bleed, can that condition be discovered by physical inspection of the printed product?

A. If there should be a tendency to bleed, that is caught before it leaves the plant.

Q. Assume just for the purpose of the question that you do not discover it.

A. I beg your pardon. That would not occur after a

formula has once been okayed. For example, can I go into a little detail?

The Master: Not too much.

Mr. Rall: Q. I think you don't understand me.

A. Yes.

Q. In response to Mr. Schaefer's questions, you said you had heard, in the industry, of inks bleeding?

802 A. That is right.

Q. Can that condition be determined by an inspection of the printed product?

A. Just by simple physical test, yes.

Q. One reason that inks that bleed are not desirable is that the printed product does not turn out as clear and as sharp as one made with an ink that does not bleed—is that true?

A. No.

Q. That is not true?

A. No.

Q. What is the objection in the industry to inks that bleed?

A. If you made a whiskey label and you pour the whiskey out there you would have ink all over your hands. Whiskey labels must be non-bleeding in alcohol. That is why I specified what the solvent was.

Q. If an ink is made with an aniline dye, can the presence of that dye be detected by physical means, in examining the finished printed product?

A. Yes.

The Master: Speak up, Mr. Witness.

A. Yes, sir.

The Master: The Reporter wants to get what you say. Speak louder.

803 Mr. Rall: Q. Could it also be discovered by chemical means?

A. Very quickly.

Mr. Rall: That is all.

Recross Examination by Mr. Schaefer.

Q. Mr. Taylor, how would you discover the presence of aniline in an ink by a physical test?

A. Well, you just—they have a different appearance to an ink maker.

Q. Take a layman, the uninitiated person?

A. They can not tell.

The Master: Let's not both talk at the same time. Wait until he finishes the question.

Mr. Schaefer: Q. Could a layman tell?

A. I don't think so.

Q. That is, it would take a man highly trained and highly skilled in the ink business?

A. A twenty-dollar-a-week man.

Q. Would have how much experience?

A. A year—six months to a year.

Q. Is an ink made with an aniline dye equally insoluble with an ink made with the pigment which you have described?

A. In water. They are dissolved, aniline dyes, in 804 alcohol, very often.

Q. Yes.

A. You understand that.

Q. Yes. Now, take water?

A. I have never heard a complaint of bleeding.

Q. Answer the question: Is there a difference in the degree of insolubility between an ink made with pigment, which you have described, and an ink made with an aniline dye?

A. I don't think there is. The dyes I am thinking of are precipitated out of water.

Q. The aniline dye, as well as a lead pigment?

A. There are three types of aniline dyes.

Q. Will you think of all three and answer the question?

A. I will. Your aniline dye in your finished ink is water soluble dye, that is blue aniline dye. That could not be used in printing ink. I said that and I stick to it. Take that same aniline dye, precipitate it with soda ash, you get an insoluble dye base which is soluble in alcohol. But, precipitated out of water, it is still aniline dye. If you add tungstate to that aniline dye, you get insoluble tungstate, still precipitated out of water, made with aniline dye.

The aniline dyes are made with dye bases, as much 805 as I am familiar with those. Any thing new can come up any day.

Mr. Schaefer: All right. That is all, Mr. Taylor.

Mr. Rall: Q. What chemical tests could be made to determine the presence of aniline dye in an ink, by inspecting or testing the finished product?

A. Just take the label, pour a little pure alcohol on it. Alcohol is a solvent for the aniline dye. It bleeds. That is

the first indication and you would then suspect an aniline dye.

Mr. Rall: That is all.

Mr. Gariepy: That is all, Mr. Taylor.

(Witness excused.)

HOWARD ORVIS, was called as a witness on behalf of the plaintiff, being first duly sworn, testified as follows:

Direct Examination by Mr. Gariepy.

Q. State your name.

A. Howard Orvis.

Q. Your address?

A. Winnetka, Illinois.

Q. What is your business or occupation?

A. Public Health Administrator.

806 Q. Public Health Administrator for what place?

A. Winnetka and Kenilworth, Township of New

Trier.

Q. What are your duties as health officer?

A. Supervising sanitary procedures, communicable diseases, school hygiene and certain other duties. Those are the major ones.

Q. Do you exercise supervision with regard to the quality of milk in those suburbs you have mentioned?

A. I do.

Q. How long have you been such health commissioner of those villages?

Mr. Schaefer: May we keep the record straight. Dr. Orvis said he was Public Health Administrator.

The Master: Q. What is your official title out there?

A. Health Officer.

Q. Health Officer?

A. Yes, sir.

Mr. Gariepy: Let the record show the word "Public" should be deleted.

A. Health Officer is the official title.

Q. Do the municipalities of Glencoe, Winnetka, Lake Forest, Wilmette, Kenilworth, Highland Park and Lake Bluff maintain a laboratory for the matter of inspection with regard to milk control?

A. I think the list is not exactly correct. Wilmette 807 is not included. Kenilworth, Winnetka, Glencoe, Highland Park, Lake Forest and Lake Bluff.

Q. What is your position with regard to being or not being Milk Sanitarian for such villages as you have just enumerated?

A. There is a contract between these villages and the village of Winnetka by which I supervise the milk control program, with the advice of the health officers of the other villages, excepting Winnetka and Kenilworth of which I am health officer.

Q. How long has that existed?

A. About two years.

Mr. Schaefer: Two years, Doctor?

A. That's right.

Mr. Gariepy: Q. Under what ordinance does the village of Winnetka, of which you are health commissioner, operate with regard to control of milk from a sanitary standpoint?

A. The so-called "Grade A" ordinance recommended by the United States Public Health Service.

Q. Is that in full force and effect at this time?

A. It is.

Q. How do you secure approval or comment with regard to your technique, your research work and your laboratory work, from the United States Public Health 808 Service?

A. There is a regular survey made at certain intervals by the United States Public Health Service and the State Department of Public Health, in which they give us the rating on the work that is done.

Q. Have you secured a rating from the United States Public Health Service during the last year with regard to your work in milk control, inspection and laboratory work?

A. There was one granted last October.

Q. Have you that with you?

A. I have.

Mr. Schaefer: Why not just ask the doctor what it was?

The Witness: I have it here.

The Master: Why don't you just ask him?

Mr. Gariepy: Q. What was the rating you secured from the United States Public Health Service with regard to your milk control, Doctor, in your work?

A. 96 and a fraction.

Q. Are you acquainted with the rating given to the City of Chicago for the same work?

Mr. Schaefer: Now, if the Master please, I move to strike this testimony with respect to the rating of the village of Winnetka and the rating of the City of 809 Chicago.

Mr. Gariepy: Why?

Mr. Schaefer: I don't think it makes any difference. I think we are a shade better than Winnetka, but I don't see the necessity for the contrast.

The Master: We don't care about the City of Chicago. Just ask him as to his rating.

Mr. Gariepy: Q. Did you give your rating, Doctor?

The Master: He already gave it, 96 and a fraction.

A. I already gave it as 96 and a fraction.

Mr. Gariepy: Q. Are you using or permitting the use in the municipality of the single service container commonly known as the "Pure-Pak" here?

A. Yes, sir.

Q. How long has that "Pure-Pak" container been used in these municipalities you just named?

A. Since November of last year.

Q. In permitting its use, have you had occasion at any time to go to the Cherry River Paper Mills at Cherry River, Virginia, and inspect the operation of the mills concerning the material in the paper and the quality of the water used?

A. I have not.

Q. How often have you made tests or checks from 810 time to time with regard to the quality of material sold in said containers?

A. Monthly.

Q. Monthly?

A. Yes, sir.

Q. Have you brought with you today the records concerning the tests done on the quality of the material sold in those "Pure-Pak" containers?

A. I have.

Q. What do those counts show, monthly, from the time you started in November, 1938, until this time?

A. Do you want me to read all of the plate counts on the finished product? Is that what you want?

Q. Yes, Doctor.

The Master: You mean the milk?

A. The milk. 4,000, November 22, 1938.

The Master: Q. 4,000 what?

A. Colonies per cubic centimeter of milk represented,

giving representation of the number of bacteria that occur in milk.

Mr. Gariepy: Q. Proceed, Doctor.

A. On November 28,—2,000.

January 4,—9,000.

January 23,—13,000.

February 20,—6,000.

March 20,—8,000.

811 April 17,—15,000.

May 3,—2,000.

June 19,—3,000.

July 27,—3,000.

August 25,—2,000.

Q. Is there a standard prescribed by the United States Public Health Service, under which your village and these villages operate, with regard to the number of colonies per cubic centimeter of milk that is permitted?

A. Yes.

Q. What is that standard?

A. The maximum by the ordinance is 30,000.

Q. Are these all within that range?

A. They are.

Q. What have you done from time to time since November, 1938, further than checking the colonies per cubic centimeter of milk as supplied in these paper containers?

A. We inspect pasteurization plants in detail once a month.

The Master: Q. What plants?

A. Pasteurization plants where this milk is prepared. We also checked the containers as to their sterility or near sterility.

812 Mr. Gariepy: Q. Have you performed the same tests with regard to milk sales in glass bottles?

A. Yes.

Q. How do the counts on the glass bottles for the same period of time compare with the counts on the paper bottles?

A. Do you mean an average of all of these from plants that we have?

Q. Yes.

A. I have no comparison of glass out of the same plant.

Q. The plant does not sell milk in glass bottles?

A. No.

Q. Have you Bowman's or Borden's?

A. Yes.

Mr. Schaefer: Q. What is this—milk?

A. Milk.

Mr. Gariepy: The same months, sold in the same suburb.

Mr. Schaefer: If the Master please, I object to any testimony along that line, because it obviously is not a comparison, as Dr. Orvis indicated. You are comparing the bacterial count of milk from one plant with the bacterial count of milk from another plant and it has no bearing on the issues.

813 The Master: I will let him answer the question. You can argue later whether it has any effect in this case.

The Witness: Do you want me to read these?

The Master: Yes, the same as you did before.

The Witness: For these dairies.

The Master: Q. By the way, this other list you gave us here, what did that refer to?

A. That referred to the bacterial content of the milk in Dean's containers as it was delivered to the consumer.

Q. Now, what is this going to be?

A. The same situation. This is Borden-Wieland.

Mr. Gariepy: Q. In glass containers?

A. In glass containers:

November 21, 1938.....	2,000
November 28, 1938.....	8,000
January 16, 1939.....	12,000
January 23, 1939.....	11,000
February 23, 1939.....	20,000
March 27, 1939.....	21,000
April 26, 1939.....	20,000
May 10, 1939.....	8,000
July 11, 1939.....	5,000
August 3, 1939.....	21,000
814 August 29, 1939.....	9,000

Q. What test have you made with regard to the sterility of the paper bottle since November, 1938, to this time, Doctor?

A. We are not doing work on sterility of bottles in the case of Bordens; we are accepting Chicago's inspection; that is part of the plant inspection work.

Q. With regard to the paper bottle?

A. With the paper bottle that Borden is putting out.

Q. Yes.

A. The paper bottle, through arrangement with Evanston, in cooperation with them, they are transmitting their reports of their work on paper bottles. We have a division of territory in which they take certain territory and make reports to us, and we take certain territory and plants and we make reports to them. They have been satisfactory. I have not the detail here.

The Master: Q. On what bottles are these?

A. Evanston.

Q. Whose paper bottles?

A. The ones being used by Borden.

Mr. Gariepy: Q. What about the Fieldcrest, or Dean bottle; do you get reports?

A. Also from Evanston, they are also doing tests 815 on those. Those have been within the requirements.

Q: Has that existed since November, 1938, to this time?

A. Yes, sir.

Q. When you say "within the requirement," what do you refer to?

A. In standard methods prescribed by the United States Public Health Service, they give a standard method, that a container shall not contain more than one colony per cubic centimeter of content of container.

Q. These all have been within that permissible range?

A. That is true.

Q. How many years have you been health commissioner?

A. I have been health commissioner there twelve years. I am in my thirteenth year.

Q. All during this time have you performed such work as you have described with regard to the testing of milk in the capacity of Milk Sanitarian?

A. I have.

Q. Do you feel as though you have had adequate control of the quality and sterility of the glass container all of the time the glass container has been used in these villages that you have had supervision over?

A. The glass container is not ideal. There are 816 times when it does not come within the requirement.

Q. Do you feel that you have adequate control now with regard to the requirements and the standards in the matter of the sanitary and sterility aspects of the paper bottles?

A. I think they are at least equal to the control that we have with glass bottles.

Mr. Schaefer: I move to strike that as not responsive.

The Master: I will let it stand.

Mr. Gariepy: Q. Have you had any occasion to go to the mills where the paper board is made, out of which these containers are formed, and used in the sale of milk?

A. I have never been in the mill.

Q. Have you had any complaints with regard to the taste of milk in the paper containers as sold in these suburbs over which you have jurisdiction and control?

A. No.

Q. Have you had any complaints with regard to the matter of cream line or visibility of cream line?

A. I have had no complaints on it.

Q. Is there a method commonly known to milk sanitarians for finding and detecting the quality of 817 milk for quantity of milk fat?

A. Yes, sir.

Q. Is that determinative of the cream line?

A. That determines the amount of fat in milk. It may or may not be comparable to the cream line. You may get types of milk in which the cream line may not be very clear, but it is generally a comparable basis and not an absolute basis.

Q. For ascertaining of cream content?

A. Yes.

Q. Have you any rule or regulation existing now concerning the use of milk bottles in these suburbs in cases or instances where there is contagious disease existing?

A. Where certain contagious diseases exist, our regulation is that no container of milk should be left on the premises; that they shall either leave the container, and it will be destroyed after use, or that the milk shall be poured from the returned receptacle into some container of the householder.

Q. How is that applicable to the glass container?

A. It is necessary to involve certain hazards in pouring from the glass container into some container, the sterility of which we are not acquainted with.

Q. How long has your village operated under the 818 United States Public Health ordinance and rules and regulations?

A. About two years.

Q. How often have you made tests of pasteurization plants, of those plants permitted to sell milk in your municipalities or in the municipalities in which you have control?

A. We test them at various periods of once a month, approximately, sometimes more frequently and sometimes less.

Q. Have you seen in your experience of several years numerous glass containers used for the sale of milk at retail?

A. Yes.

Q. Do you know in the trade or in your profession of anything commonly known as a standard milk bottle?

A. Yes.

Q. What is that?

A. Standard milk bottle is a glass container of specified content and certain labeling.

Q. What do you call the "Pure-Pak" container and the other paper containers that are being permitted to be used in your municipalities now?

A. We interpret the meaning of the ordinance to include those.

819 Q. Have you had any complaint since November, 1938 concerning absorption of milk into the paper board used in the paper containers?

Mr. Schaefer: That is objected to. I have let this testimony as to complaints go in so far, without objection, but there comes a point when I must object. Whether there have been complaints or not is entirely immaterial.

The Master: Yes. I will sustain the objection.

Mr. Gariepy: Q. Are you acquainted with the various rinse tests that are usually performed for finding the colonies per cubic centimeter on a container?

A. Yes.

Q. Have you used those in your work in Winnetka?

A. We have.

Q. And are the same tests employed as employed in the glass bottles?

A. Yes.

The Master: Q. Are they employed on the paper containers, too?

A. Yes, sir.

Mr. Gariepy: Q. The same tests?

A. Yes, sir.

Q. These counts that were read off by you as 820 having been tabulated from November to this date on the milk sold in the paper containers, how were those counts taken?

A. Those counts were made by collecting samples from the delivery truck and taking carefully measured 1 c. c. samples of those and plating it according to standard methods.

Q. Were they picked at random from time to time or was there any particular arrangement concerning the picking of the truck and so on?

A. No. They are picked at random.

Q. Did you secure blank samples of the paper containers from time to time, from the Chemung Plant of the plaintiff for the purpose of performing tests?

A. When inspection is being made, he takes one of the containers off of the line and takes it around the filler and has it capped and takes it back for the test for sterility.

The Master: Q. How is that?

A. Takes it around the filler and has it finished, capped, as it will be.

Mr. Gariepy: Q. How often has that been done, to check upon the container?

A. Approximately once a month.

821 Q. Is that done by pre-arrangement, or do you appear there whenever it suits your pleasure to make an inspection?

A. That is true.

Q. Have those tests been satisfactory?

A. They have.

Q. Have they been within the standard and the range permitted by the United States Public Health Service?

A. They have.

Q. Have you performed any disintegration tests on the paper board since November, Doctor?

A. We have not.

Q. Why have you not performed such disintegration tests?

A. We are getting reports of that test through Dr. Jordan, who is taking the board as it is manufactured and sending reports of those tests to us, on the bottom of each carton is a number corresponding to the batch from which the board is taken, from manufacture, and we compare

the number on the cartons we take with a test that has been submitted to us.

The Master: Q. Who is Dr. Jordan?

A. Dr. Jordan is a member of the committee on standards for the United States Public Health Service, for milk containers.

822 Mr. Gariepy: Q. How often have you been getting those, Dr. Orvis?

A. They come regularly, covering the paper that is being used. They probably come every sixty days or something like that. I wouldn't be able to say exactly.

Q. Are you of the opinion that gives you adequate control with regard to the bacteria counts in the paper board itself, of the quality of the paper board?

A. I think it does.

Q. If at any time you felt that the board reports were not genuine, that the reports on the paper board that you received were not genuine or authentic or accurate, do you have a method for checking up on the quality of the paper board, concerning bacteria count?

A. We could easily do a disintegration test in our laboratory.

Q. You have the paraphernalia there?

A. Yes.

Q. Would it require that you go to the mill in order to perform that disintegration test?

A. We would prefer to take the board from the container as it was on the assembly line or the filling line.

823 Q. The finished product itself?

A. Yes.

Q. Have you picked up the glass bottles of milk that you used as samples for tests from time to time at random, as you did the paper bottles of milk?

A. Yes.

Q. These reports of inspection and the bacteriological work performed in your laboratory and approved of by the United States Public Health Service also cover this matter of the inspection of the paper containers and the colonies per cubic centimeter?

Mr. Schaefer: That is objected to, if the Master please. There is no testimony here that the United States Public Health Service has approved any bacteriological tests, to which Dr. Orvis has testified. The United States Public Health Service isn't in that business and doesn't do it.

The Master: I sustain it.

Mr. Gariepy: I withdraw the question.

Q. What rating is considered as compliance with the United States Public Health Service Ordinance with regard to the bacteria count in pasteurized milk?

A. If we are going to be a recognized city we have to have an average of 95 per cent compliance; that would include laboratory and inspection and all of the other factors. However, there is no set standard to which we have to comply; it is simply a matter of whether we get sufficient rating to be an accepted city.

Q. Have you had an accepted rating from the Department of Public Health at Springfield, Illinois?

A. Yes, they have expressed themselves on our rating as acceptable.

Q. What rating have they given to you, Doctor?

A. Well, the rating that was given on this survey, they gave us one hundred percent rating on our laboratory procedures.

Q. The total rating on all the procedures is 96.7?

A. That is correct.

Cross-Examination by Mr. Schaefer.

Q. Doctor, what phases of the production, processing and distribution of milk are regulated under the United States Public Health Service Standard Milk Ordinance?

A. What processes?

Q. What phases of the production and distribution of milk?

A. They start with the control of the health of the cow, the sanitation of the production and cooling on the farm, the processing of the milk in the collection and pasteurization plant and the laboratory control of the finished product as delivered to the consumer.

Q. They even regulate, in some instances, the food given to the cow?

A. The food given to the cow that may in any way be deleterious to the quality of the milk, may be objected to.

Q. Now, with respect to the sanitation of the farm, the United States Public Health Service Standard Milk Ordinance—and hereafter I will just call it the standard milk ordinance, which is the one under which you operate, contemplates inspection of the dairy farm on which milk is produced?

A. It does.

Q. It contemplates the regulation of such things as the water supply of that farm the ventilation of the cow barn, the complete sanitary condition of the cow barn and of the cow yard.

A. Yes.

Q. Do you make inspections of farms to see whether or not that ordinance is complied with?

A. We have an inspector that spends his entire time on farms.

Q. On farms?

A. Yes.

826 Q. Only milk from farms inspected by your inspectors is permitted to be sold in the villages of which you testified you are employed?

A. If it is acceptable. We use the regular rating of the Public Health Service.

Q. But you don't permit any milk to be sold in those municipalities which does not come from inspected farms?

A. No.

Q. And with respect to receiving plants, do you inspect receiving stations or receiving plants?

A. Our inspection covers pasteurization plants. All of the plants that are under our inspection also pasteurize at the plant of receiving.

Q. What do your men look for when they go to inspect a pasteurization plant?

A. They check first on the raw milk that comes into the plant, as to its quality.

Q. Bacterial count?

A. Bacterial count or reductase test which we use. They check on the equipment as to its conformity to the ordinance and its operation in conformity to the ordinance; also after use, as to proper knock down and cleansing bacteriacidal treatment of the pipe and the equipment of 827 the plant, checking of the pasteurization charts and thermometers, to see whether they are standard; and finally they check the bottle washing facilities and the container as it goes out after it is cleansed, and bacteriacidal equipment.

The Master: What does this have to do with the paper container?

Mr. Schaefer: I think it is quite material.

The Master: Go ahead. I don't see it yet.

Mr. Schaefer: Q. They also inspect the delivery trucks?

A. Yes. Another point they inspect is the source of water at the pasteurization plants and its acceptability.

Q. Would you consider it good public health practice to permit milk to be sold in one of your municipalities from a pasteurization plant not inspected?

A. No. I wouldn't want to do it.

Q. And from a farm not inspected?

A. No, I wouldn't want to do it.

Q. Would you consider it—is it in conformity with the United States Public Health Service Standard Milk Ordinance to accept tests, the result of reductase tests conducted by the pasteurization plant where the material is received?

A. Yes, provided they are checked at intervals to 828 see that they are properly performed.

Q. That is, your man goes out there physically and checks them, himself?

A. We check spot samples at times.

Q. You spot check?

A. Yes, we spot check.

Q. And at irregular intervals?

A. That is right.

Q. You spot check also the bacterial count of the pasteurized milk?

A. Yes, that is collected from the distribution truck at irregular intervals.

Q. Would you consider it good public health practice to accept the bacterial count of the dairy?

A. No. I would prefer to have my own, select my own sample.

Q. When you are checking on the bacterial count of milk containers by the rinse test, milk bottles, glass bottles, by the rinse test before they are filled with milk, would you consider it good public health practice to rely on those made by the dairy?

A. You get the same as you do on the raw milk, to a certain extent, provided you spot tested them.

Q. Without a spot test, you wouldn't consider it good public health practice?

829 A. No. I would want to have some control over it.

Q. Do all of the municipalities you mentioned on your direct examination make farm inspection?

A. We are making inspection and do all of the work and submit monthly reports to all of these villages.

Q. Then they pay the village of Winnetka through some arrangement as to compensation?

A. Yes, that is right.

Q. Now, have any of the municipalities you enumerated adopted any regulations concerning the use of paper milk containers?

A. Not as yet. We have a tentative one we are operating under and gathering data from which we will in a few months probably adopt regulations.

Q. What do you mean when you say you are operating under a tentative regulation?

A. Tentative regulation of the United States Public Health Service, relative to paper containers, and we are operating as near as we can to that at the present time. That hasn't officially been adopted as yet.

Q. On the contrary, are you sure your information is correct?

A. What information?

Q. When you say that it has not been officially adopted?

830 A. I mean by our villages.

Q. You mean the villages have adopted no final regulations?

A. No.

Q. You don't mean—

A. The process of drawing that up, the ordinance is being drawn up.

Q. Do you know whether or not the United States Public Health Service has adopted regulations on that subject?

A. I think they have just adopted one with their 1939 standardized methods.

Q. Are you familiar with the provisions of those regulations?

A. Some of them.

Q. None of the municipalities have any regulations concerning the process of manufacturing of paper board?

A. Not as yet.

Q. Do you contemplate adopting those regulations?

A. Yes, they are in the process of being drawn up as an ordinance.

Q. Those regulations will contemplate what, with respect to paper manufacturing plants?

A. So far as the paper manufacturing plants, you

mean control of the paper, etc., it recommends it be
831 made from virgin bleached pulp, so far as the contents of the paper go.

Q. And that is all?

A. There are other numerous regulations, but that is the primary one.

Q. What are some of the others?

A. Some of the others are the contents of the material, that is to say in testing the board, to be insoluble, to be free from bacterial content, and the others are the type of paraffining material, the temperature at which it shall be heated for coating the paper and things of that kind, and the recommended bacterial contents by the wash tests for the finished container.

Q. By the rinse test?

A. By the rinse test.

Q. You have no regulations concerning paper conversion plants?

A. We have not had.

Q. In effect?

A. No.

Q. You have no tentative regulations concerning them?

A. Yes, sir.

Q. What do those tentative regulations contemplate?

832 A. This is in regard to the conversion plant.

Q. The conversion plant?

A. Yes. That will be the handling of the paper, the proper covering of the paper if it is not converted at the paper plant itself.

Q. Yes.

A. Between that and the conversion plant, discarding of the upper and lower sheets or that which may be contaminated by handling, and the proper packaging of the finished cartons, the finished containers in cartons so they will be in no way contaminated in shipping and handling.

Q. How will you determine whether or not those regulations are complied with?

A. We will determine that by the condition of the container as it reaches the plant, the pasteurization plant.

Q. You mean you will determine whether or not the first or the last sheet have been discarded by a test made on a finished container picked out at the dairy?

A. If the conversion is done at the dairy, as in this case,

we will observe at the dairy as to whether these regulations are complied with.

Q. We are using a term you may not be familiar with, Doctor, that seems to have been employed by the people in the paper container industry. When I say "conversion plant" I mean a plant at which the paper blanks are cut out from which containers are made, cut out from large sheets of paper.

A. Yes.

Q. I don't mean the conversion in the dairy.

A. Well, there are some of them that convert into the entire container at the conversion plant, and others are flat. I have sheets come flat to the plant. So far as in this particular instance we have in mind here, this disintegrated board test would satisfy us as to the condition of the container blanks as it comes to the plant.

Q. You can determine whether or not that first or last sheet was discarded?

A. We can tell that.

Q. You can determine from that test how it was wrapped when it is shipped from the paper mill to a conversion plant?

A. No, we couldn't tell that.

Q. Could you tell whether or not any of the regulations you have just enumerated with respect to conversion plants are being complied with by that test?

834 A. No, we couldn't tell that.

Q. What is the object of adopting regulations relating to those matters?

A. We could require from the plants that use the paper, reports from individuals who are making these inspections.

Q. What individuals do you have in mind?

A. At the present time we require reports—a report on the disintegrated board.

Q. From whom?

A. Dean has to give us the report on that from each batch a container is made.

Q. Dean makes the test?

A. No.

Q. Who makes the test?

A. It is made by Dr. Breed's laboratory at Geneva.

Q. Is that the Dr. Jordan whom you mentioned on your direct examination?

A. He is one of the men. The work is under the supervision of Dr. Breed, he is chairman of the committee.

Q. You inferred, or at least I thought you inferred in your direct examination, that Dr. Jordan was connected with the United States Public Health Service?

835 A. Only indirectly. I think he is a worker with the committee that has been appointed by the American Public Health Association.

Q. You said the United States Public Health Service, I thought.

A. I may have been wrong.

Q. Jordan is not connected with the United States Public Health Service?

A. I don't think so.

Q. Now, how would Jordan or a man occupying an equivalent position, similarly located, determine by disintegration tests whether or not these regulations you propose to adopt have been complied with?

A. Not unless he made inspections.

Q. Do you contemplate that inspections be made?

A. That may be. Such a thing is being discussed as part of the regulations. I am not sure whether it will be or not.

Q. Is there any point in adopting the regulations if you can not carry them out?

A. No, there is no point in adopting the regulations if you can not carry them out.

Q. The only way you can carry out those regulations you have enumerated and further regulations you contemplate is by inspection?

836 A. That is so far as covering the board going to a conversion plant, that would be true.

Q. How about the paper plant?

A. The paper plant itself?

Q. Yes.

A. Personally, I doubt whether it is necessary to inspect the paper plant. Paper as it comes from the hot rolls is practically a sterile product from the finished paper.

Q. If you don't know, just say so. Do you know of your own knowledge whether or not the sanitary quality of paper produced by a paper mill is uniform from day to day and from hour to hour within a paper manufacturing plant?

A. I would not anticipate it were. I have not inspected

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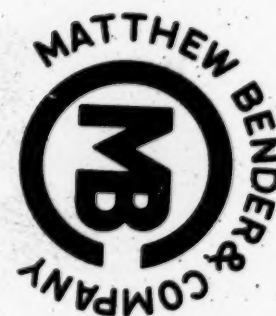
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the plants, but I would not believe that is true in any plant.

Q. The testimony here is that there are considerable variations, not only from plant to plant, but within the same plant, and not only from day to day, but—

A. I would say that that would be true

Q. Now, without inspection, how are you going to determine the sanitation or the sanitary condition of the paper plant?

837 A. You are not going to, without inspection. You are producing a practically sterile product as an end product. The contamination of that paper will be in the handling thereafter.

Q. Do you know whether or not there are considerable degrees of fluctuation in the bacterial count on finished paper of paper mills?

A. Yes.

Q. You know that there are?

A. The research that has been done shows that.

Q. How will you know whether the paper being used in paper containers in your municipalities is of a high sanitary quality or a low sanitary quality?

A. I will be willing to depend upon the disintegration board test.

Q. How much board will you disintegrate?

A. A gram per container.

Q. Yes, now how many containers out of a lot?

A. We will run them at intervals. If we find high tests, of course, we will run much more frequently, the same as we do when all of the process is controlled.

Q. Where is the paper used in the paper containers sold by the Fieldcrest Dairies converted?

838 A. It is converted in a Chicago plant, as I understand.

Q. Do you consider it important where it is converted?

A. It is interesting. It is mildly important.

Q. Do you think it is important from a public health point of view?

A. I would say it had significance. It is not the most significant thing by any means.

Q. What is the most significant thing?

A. The most significant thing is the condition of the container at the time the milk enters the container.

Q. And despite the variations, from plant to plant, and

within plants, from day to day and from hour to hour, do you believe that my sampling of one container at intervals of thirty to sixty days is sufficient from a public health point of view?

A. It is comparable to our other methods of control as we use them for glass.

Q. Now, is it? Let's just analyze that. You testified you make a physical inspection of the plant, the pasteurization plant and of the equipment for washing the bottles?

A. Yes.

Q. Say "Yes", instead of nodding.

839 A. Yes.

Q. Answer out, so that it will show in the record.

A. Yes.

Q. And then you finally determine the end result of the operation of that equipment by a test?

A. By a test.

Q. You testified you would not be willing to rely on the test, alone?

A. Not on the washing of bottles.

Q. And yet you say it is a comparable method?

A. The idea is comparable, that you are taking only one bottle out of several thousand to make your tests. You are also taking only one paper container out of several thousand to make your test. We can't take all of them. That goes beyond the ability of our inspectors to cover.

Q. That is true with respect to glass and with respect to paper?

A. To anything, yes.

Q. With respect to glass, you would consider it adequate from an adequate health point of view to rely solely on the rinse test of a bottle without inspection of a pasteurization plant?

A. I think a rinse test of a bottle could give us
840 a very good idea if we go behind it with inspection of the container, combined with inspection of container.

Q. Speaking of the glass container—

The Master: Rinse test of a container, combined with inspection?

A. As you take the container, you inspect it as to whether it is physically clean, whether there is any debris left in the bottle, as well as the bacterial test and things of that kind.

Mr. Schaefer: Q. You have not followed that practice with respect to glass, have you?

A. Yes, we do the same with our glass.

Q. I thought you testified you inspected the pasteurization plants?

A. We also take samples of the bottles, it is part of the process.

Q. You don't rely on the rinse test alone in the case of the glass bottle?

A. No. We look at the container and inspect the container as well as the rinse test.

Q. You look at the container and inspect the container as well as the rinse test, but you also inspect the plant.

A. Yes, sir.

841 Q. You inspect the equipment?

A. We inspect the equipment.

Q. Regularly?

A. Yes, sir.

Q. And a pretty rigid inspection?

A. Yes, sir.

Q. Yet you consider from a public health point of view, it is good public health practice to relax the practice you follow in the case of glass, in the case of paper?

A. I think there is less hazard in the paper container than in the glass container, which may have been picked up at a home where there is contagion or where it has been set out and the flies have contaminated it and the material has dried on the glass, for instance.

Q. So far as you know, is there any other health officer, other than those in the municipalities which you have described, who have taken that view of the situation?

A. I don't know whether there are any others or not.

The Master: Q. When you make this test of the paper container, do you also make inspections of the machinery and equipment of the dairy?

842 A. We do.

Q. And pasteurization equipment?

A. Of the entire equipment.

Q. What is the difference in your entire inspection, where you inspect the glass bottle and where you inspect the paper container?

A. Everything that goes on in the plant is inspected in either case.

Q. The only difference between the paper container and the milk bottle inspection, is what?

A. The history of it before it gets to the plant.

Q. Well, I don't understand that. You make a rinse test and a physical inspection of the milk glass bottle container?

A. Correct.

Q. What do you do in the case of the paper container?

A. The same.

Q. You make a physical inspection of the paper container?

A. And rinse test.

Q. And a rinse test?

A. Yes, sir.

Q. But, you don't make any disintegration test?

843 A. We are not making a disintegration test. We have a test given to us of the disintegration of the batches of board from which the paper is made.

Q. Who gives that to you?

A. That comes through Dr. Breed's laboratory at Geneva, that is given to us at regular intervals.

Q. Go ahead.

A. As to the quality of the board.

Mr. Schaefer: Q. What you inspect in the pasteurization plant, in the case of glass, is chlorination, washing and sterilization of bottles?

A. Yes, that is true.

Q. Who selected the samples of the paper that Dr. Jordan tests?

A. Dr. Jordan does.

Q. Are you sure of that, Doctor?

A. Or some one under his control. It is under his control, at least.

The Master: Q. What does this Dr. Jordan conduct that is different from the one you mentioned that Dr. Breed conducts?

A. He is working at the same laboratory.

Q. Is that the same test?

A. The same test.

844 Q. You mentioned Dr. Jordan has a public health service at Washington, didn't you?

A. No. He is working for the committee of the American Public Health Association—not the United States Public Health Service.

Q. I see. His is a disintegration test, isn't it?

A. Yes, sir.

Q. His and Dr. Breed's is the same thing?

A. Yes, sir.

Mr. Schaefer: Q. Do you know of your own knowledge how Dr. Jordan's samples are selected?

A. I have not seen them selected.

Q. Do you know whether or not he gets them from the plant?

Mr. Gariepy: I object. He said he didn't see them, and he couldn't tell. That is the answer.

The Master: He is asking if he knows.

A. No, I don't know, except the rules that are laid down by the United States Public Health Service, we assume they are being followed out.

Mr. Schaefer: Q. What rules?

A. That they shall be selected at random from the material that is in a fabrication plant, as I understand it.

The Master: Q. What plant?

845 A. Fabrication plant where they are folded.

Q. Who does the selecting?

A. Dr. Jordan does. I have not seen him do this.

Q. Is it your understanding that Dr. Jordan goes to the plant, or that the plant merely sends him a container and says "Here, go ahead and examine it"?

A. I understand he is doing his selecting.

Mr. Schaefer: Q. Did you ever make any inquiry to ascertain whether he is?

A. I have been told that. I have not seen it done.

Q. Dr. Sanborn testified those were sent to Geneva by the mill.

A. I see.

Q. You made no inquiry to determine what the fact was?

A. I have not talked to Sanborn or Jordan about it.

Q. Did you make no inquiry of any one else to determine who took the samples?

A. Any inquiry?

Q. Yes or no, Doctor, have you made any inquiry to determine?

A. I have made inquiry on that.

Q. Of whom did you inquire, Doctor?

Mr. Gariepy: He is answering, if you will let him.

The Master: Answer the question.

846 Mr. Schaefer: Q. Of whom did you inquire?

A. I inquired through communications of a representative—I don't know what his name was. We were assured that was the method by which it was being done.

Q. You communicated with a representative of whom?

A. There was a party at Dean's. That transaction was personal.

Q. By Dean's, you mean the Fieldcrest Dairy?

A. The Fieldcrest Dairy. We were there making investigation and my inspector inquired of him as to the source. He assured him, as I understood it, that they were taking their samples—

Q. Were you there at that time?

A. I was not there.

Mr. Gariepy: I move to strike that. It is all rumor and guess and based upon hearsay.

Mr. Schaefer: I consider the fact it is hearsay as rather important.

Mr. Gariepy: I move to strike it.

The Master: I think I will let it stand. It shows what depth the inspection has gone to.

Mr. Schaefer: Q. Are you aware, Doctor, that defects in the quality, the sanitary quality of paper, are perceptible when the paper comes off the calender stacks at the paper mill?

A. I understand there are sometimes spots on the paper that indicates contamination.

Q. Selection of the sample might be an important factor, then?

A. I suppose it would, yes.

The Master: Q. Just where is it you have taken it, as to these disintegration tests—Geneva?

A. Yes, Geneva, at the laboratory there.

Q. Well, now, is Geneva some public organization or private organization?

A. It is the experimental station of the New York State Agricultural Department. It has to do with milk control. Dr. Breed is also the chairman of the committee of the American Public Health Association to carry on research work in regard to paper containers.

Q. That is a private organization?

A. The American Public Health Association is.

Q. And Dr. Jordan is connected with that same organization, is he?

A. That is true.

Mr. Schaefer: So that your recollection is clear, this is the organization which Dr. Sanborn testified was financed by paper manufacturers.

848 The Master: That is that public health organization.

Mr. Schaefer: No. It is private.

The Master: What is the name of it?

Mr. Schaefer: The Geneva Experimental Station.

Mr. Gariepy: Of the State of New York.

Mr. Schaefer: They are doing this work under a grant of money furnished by the manufacturers of paper and paper containers.

The Master: They are doing it for the New York State Agricultural Department.

Mr. Schaefer: Yes, so I think, from the testimony. Dr. Sanborn testified he was working for the consumer.

Mr. Gariepy: Then it is for the public.

The Master: For this experimental station which is under the supervision of the State of New York.

Mr. Schaefer: There is no testimony to that effect.

Mr. Gariepy: Yes, there is. Look in the record. He says he is working for the ultimate consumer. The consumer is public health.

The Master: Of course, that is argumentative, but here is a public official who says he takes the word of this group of experimenters at Geneva, who, in turn, get their samples

from the paper companies, and the paper companies do
849 the selecting of the particular samples which are submitted to the experimental station. Now, with those samples so submitted, that group of testers makes certain experiments and sends a report out to this witness, and he takes their word for it, as to what they have found is the result of their experiment. Now, that is all that Mr. Schaefer is getting at.

Mr. Rall: I don't quite recall, but it seems to me, of course, Dr. Sanborn's testimony did cover the method by which that selection is made, and I think he told of the particular person responsible to him who made the selection. At least, the record is clear as to that.

Mr. Schaefer: Whatever is there is there.

The Master: Mr. Schaefer says the selection is made by the paper company.

Mr. Gariepy: And our answer is—so what? Suppose it is selected.


The Master: That is what Mr. Schaefer says.

Mr. Gariepy: So what, Mr. Schaefer? You people go down and select it.

The Master: They might select it, either way. The witness that selected and produced samples here selected some pretty bad ones, as I recall it. Go ahead.

850 Mr. Schaefer: Q. Whose word did you take as to the sanitary conditions in the conversion plant?

A. I have no control of conversion plants.

Q. No control at all of the conversion plant? 

A. No.

The Master: Q. What do you mean by the conversion plant?

Mr. Schaefer: The plant which Dr. Orvis thinks is in Chicago, which is actually in Middletown, Ohio. By a conversion plant I mean the plant at which the paper is cut, formed, printed, and one side glued.

The Master: I see.

Mr. Schaefer: Q. You have no control of that plant, at all, Doctor?

A. No.

Q. If an employe in the conversion plant lived in a home where there was an active case of typhoid fever or scarlet fever, diphtheria or some other disease, and that employe handled the paper, would you consider that good sanitary practice?

A. No, that would not be good sanitary practice.

The Master: Q. Would that same condition possibly exist in case he were a milk bottle washer?

A. Exactly. Some hazards in both cases.

851 Mr. Schaefer: Q. What steps do your municipalities take to control that situation in the case of bottle washers?

A. Any one that operates in a milk plant, of course, the State statute is that they have to report all cases of contagious disease and desist from working in a pasteurization plant during the period that the illness occurs in the home.

Q. You see that they do desist from working?

A. Yes.

Q. And you get reports?

A. Yes, sir.

Q. And there is a criminal penalty attached if they continue to work?

A. There is.

The Master: Q. The same thing applies in the case of an employe who is in the same condition and works on a paper container?

A. I don't know of any such statute anywhere.

Mr. Schaefer: Q. At what temperature is paraffin ap-

plied to the paper containers in which milk is being sold in the municipalities you represent?

A. About 161.

Q. For how long a period are the paper blanks which are being sold in those municipalities immersed in 852 paraffin?

A. Sixteen seconds.

Q. How would it affect your attitude towards the use of paper milk containers if you knew the United States Public Health Service had promulgated regulations requiring that it be immersed in paraffin at not less than 180 degrees for not less than thirty seconds?

A. I knew that was true.

The Master: What is that?

A. I knew their new requirement—I thought was 175 but it is decidedly more than ours.

Mr. Schaefer: It is 180, Doctor.

A. It is 180.

Q. How does that affect your attitude towards the use of paper containers?

A. Some of the research work out of town seems to indicate that neither 160 nor 180 would make absolutely sterile containers, and the viscosity of the material with which it is covered may be a greater factor of sterility of the container than is the temperature of the paraffin.

Q. That is in accord with the testimony here, I think.

Do you propose to require in your new regulations 853 immersion at 180 degrees at not less than thirty seconds?

A. I anticipate we will follow the recommendation of the United States Public Health Service.

854 Mr. Schaefer: Now, if we might have a recess, for just a few minutes, it will give me a chance to check up.

The Master: Very well.

(A short recess was here had, after which the proceedings were resumed as follows:)

Mr. Schaefer: Q. Dr. Orvis, why are these municipalities with which you are connected going to adopt regulations pertaining to the manufacture and handling of paper containers for milk?

A. It has been the agreement between the municipalities that they will follow out such procedure as the United States Public Health Service recommends, as far as it is within their power to do it.

Q. Is it for the protection of the public health?

A. It is.

Q. You would not adopt those regulations unless you thought they were necessary, would you?

A. No. We have to have an authoritative ordinance and method of control in order to compel it, and have some method of survey, or otherwise, by which we can sell our services to the other villages.

Q. And you cannot regulate without regulations?

A. That is true.

855 Q. That is, you are in a rather embarrassing position now, with tentative regulations, are you not?

A. Yes.

Q. There is no way of enforcing them?

A. Yes, that is true.

Q. We run into the same situation here occasionally, and it makes difficulties.

A. Yes.

Q. Now, Doctor, considering the fact that up until October or November of 1938, you have consistently checked the milk sold in the municipalities whose health you are protecting from the cow to the consumer, do you feel the same sense of security in permitting the sale of milk in containers of unknown origin that you feel in permitting the sale of milk in glass bottles, sterilized under your inspection?

A. I think there is no greater hazard involved in the selling of milk as we are selling it in glass containers or, in paper containers, rather, than there is in glass containers.

Q. Do you feel the same sense of security?

A. I feel the same sense of security, yes.

Mr. Schaefer: That is all.

856 *Redirect Examination by Mr. Gariepy.*

Q. Doctor, do you know anything about the ownership of the glass bottle and the quality of sand used in making the glass bottle?

A. No.

Q. Or the amount of lead salts used in making it?

A. No.

Q. Or any other chemical?

A. No.

Q. Do you have any occasion to check at a glass manufacturing company, such as Owens-Illinois, that supplies the glass for most of the bottles sold in the city of Chicago, as to how they make the bottles?

A. I never have.

Q. Has the United States Public Health Service suggested just exactly what you shall do with regard to glass bottles, in the matter of testing glass bottles for bacteria?

A. What is that?

Q. Has the United States Public Health Service suggested rules and regulations?

A. They have laid down specific regulations.

Q. Are you applying the same regulations with regard to the bacteria count per cc on the paper bottle as on the glass?

857 A. Yes.

Q. Is there any greater hazard in the paper than in the glass?

A. No.

Q. With the paraffin at 160 degrees or 170 degrees, what difference does it make with the bacteria count, if it is within the same limits?

A. We don't think there is any.

Q. Now, as to the matter of diseased employees operating in the paper mill, is there any difference between that and the diseased employee sticking his finger into a glass milk bottle?

A. That is even a greater hazard.

Q. And you know it is a common practice for the milk driver to pick a bottle up and put his finger into the bottle top and carry it that way.

Mr. Schaefer: Just a minute. I object to that.

Mr. Gariepy: It is the same thing, Master.

The Master: Objection sustained.

Mr. Gariepy: Q. Have you heard of any diseased employee working in the plant of the Cherry River Company or the Gardner-Richardson Company?

A. No.

Q. Have you any reason to suspect that they are hiring more employees who are diseased down there than the Bowman Dairy people or the Borden Company do when
858 they are bottling milk out in their glass bottling plants?

A. No, I have not.

Q. The conditions should be the same and they should have the same regard for public health?

A. I would expect it.

Q. Counsel asked you concerning conditions of unknown origin. Apparently he is referring to the fact with regard to the origin of the paper container. Are you acquainted with the origin of the paper container, what it is made out of, the raw material?

A. We are.

Q. Then there is not any unknown origin, is there?

A. No.

Q. Now, when you are talking about accepting somebody else's word concerning bacteria counts, do you accept from the city of Chicago certain counts with regard to the milk at certain pasteurizing plants or dairies?

A. We accept all of their inspection service in plants that operate in Chicago.

Q. Do you know of any reason why that should not be accepted?

A. No. It is perfectly acceptable to us. We feel it is up to standard.

859 Q. Is there any different basis in your accepting that than your accepting reports from Dr. Breed or Dr. Jordan, or anybody else, on the paper board?

A. No, we accept them on an equal basis.

Q. They are both there for the purpose of serving the same interest, that is, public health?

A. Yes.

Q. And the protection of the public health?

A. Yes.

Q. Have you had any reason to suspect any of the reports you have received concerning the disintegrated board, from Dr. Breed or Dr. Jordan, or anybody else, in relation to the Pure-Pak containers you have used since last year?

A. We have not.

Q. In the event you suspected, would you check it immediately as to the authenticity or the genuineness of the reports?

A. We would do our own testing.

Q. And if you found something wrong with the glass bottle and with the milk in the glass bottle, showing a high count, how would you check that?

A. We would stop the use of those bottles.

Q. And you do the same with the paper board?

A. Exactly.

860 Q. And that applies whether the United States Public Health Service has told you to do it by regulation or not?

A. That is true.

Q. That is just a matter of common practice with the Milk Sanitarium, is it not?

A. Yes.

Q. In regard to spots showing up on a piece of paper board, if you were suspicious as to whether those spots showed second-grade stock or not, how would you check that?

A. We would also do a test on that, a disintegration test.

Q. And if there were spots or little holes or spores on the inside of a glass milk bottle and you were suspicious as to whether or not that contained a dangerous bacteria, how would you check that?

A. We would dispose of the bottle.

The Master: Q. You would what?

A. Dispose of the bottle, throw it out of circulation.

Mr. Gariepy: Q. All of these regulations that you were asked about by Mr. Schaefer on cross examination, prescribed for the matter of control with regard to the quality of the milk and the sanitary condition of the milk, are 861 all for one purpose, are they not?

A. They are.

Q. And you can test as to whether the finished product is an acceptable container, concerning sanitation and sterility, by doing what?

A. Will you repeat that question, please?

Mr. Gariepy: Will you read that, Mr. Reporter?

(Mr. Gariepy's last question was read by the reporter as above recorded.)

The Witness: A. By doing the rinse test for containers.

Mr. Gariepy: Q. Is there any such thing as a uniform sanitary piece of glass used to make milk bottles with?

A. I don't think so.

The Master: You don't contend that glass itself is subject to—

Mr. Gariepy: Variations?

The Master: (Continuing.) —bacterial count?

Mr. Gariepy: Oh, yes.

The Master: The glass itself?

Mr. Gariepy: Q. Doctor, is there not a variation in the bacterial counts in glass bottles?

A. Yes, they often exceed the allowance, the maximum.

862 The Master: Q. No, I mean the material of which the glass bottle is made. That does not have any bacterial count, does it? You could not conduct a disintegration test on the glass itself, could you?

A. No, you could not.

Q. It is only something that happens on the surface, inside or out, that counts?

A. That is true.

Q. All of these questions about comparing paper with glass are beside the point, aren't they?

A. I feel that all the hazard involved is on the surface of either container.

Q. It is what?

A. That all the hazard involved is on the surface of either container.

Mr. Gariepy: Q. And both of them can be detected by the rinse test?

A. Yes.

Q. With the glass the rinse test and the disintegration test on the paper?

A. The rinse test on the paper.

Q. The rinse test on the paper?

A. Yes.

The Master: Q. In the case of glass bottles, the bacteria are on the surface of the glass?

A. That is true.

Q. In the case of the paper container, the bacteria 863 may be on both the inner and outer surfaces of the paper container or in the paper itself?

A. The question is as to whether the bacteria that are in the paper itself ever come in contact with the milk?

Q. That is another question.

A. That is another question, yes.

Q. I am just talking about making tests.

A. Yes, there are two tests for the two different purposes.

Q. In the case of the paper container?

A. Yes.

Q. While in the case of glass there is only the one test?

A. The surface test.

Q. Which is a surface test?

A. Yes.

Mr. Gariépy: Q. And they are both accepted reliable tests used in the industry?

A. They are.

Q. Now, whether Dr. Jordan selects these samples, whether they are sent to him or not, does that make any difference as to whether you make a disintegration test and find a condition that shows an acceptable count, as standard?

A. I am willing to accept it that way as being a good, fair test.

Q. And if you were suspicious or not as to whether
864 there was connivance or collusion in handing in the proper report, you would test it?

A. Yes.

Q. By what?

A. By making a test, a proper test.

The Master: Q. Have you been doing that?

A. We have been doing it in the beginning, in running tests to determine that, and we found they were comparable with the other tests that we had, and we have not been doing it since.

Q. You mean you did some disintegration tests back in 1938, in December?

A. Yes.

Q. When you started out?

A. Yes.

Q. And the results you obtained from those tests, in your opinion, compared—

A. Favorably.

Q. (Continuing.) —favorably with those which you had reports of, namely, from Geneva?

A. That is right.

Mr. Gariépy: Q. Have you had any occasion to suspect that the reports you have been receiving from Dr. Jordan or from Geneva are not genuine?

A. We have not.

Q. And accurate reports, concerning the bacteria in the paper board?

A. We have not.

865 Q. And now, concerning hazards at a milk plant using the paper container as compared with hazards at a plant using the glass bottle, are you acquainted with

the number of operations employed in each of them in the filling process and so on?

A. Yes, I know what they go through.

Q. Are there less in the plant using the paper bottle than there are in the plant using the glass bottle?

A. I think there are.

Q. Have you in your experience since November, 1938, in checking the counts on the glass bottle, shown variations; have your tests shown variations in the counts from time to time?

A. That is true.

Q. And the same applies to the paper?

A. That is true.

Q. Is there anything in these tentative recommendations which Mr. Schaefer asked you about as being suggested by the United States Public Health Service that is not in accordance with the practice that you have adopted and followed since November, 1938, in order to safeguard public health, as applies to these paper bottles?

A. They are all parallel. There is some variation 866 in detail, the technique and so forth.

Q. What about the processes employed and the mechanical operations at the plant in filling the milk bottle, as compared with the number of operations and mechanical processes at a plant using the glass bottle, you having observed both of them?

A. The processes using the paper container are almost all of them automatic, in a greater degree than those using glass.

Q. Would that present more or less hazard with regard to public health?

A. Less hazard, I think.

Q. When does the human hand touch the paper container, after it has been received in blanks from the fabrication plant at the dairy, where the container is filled?

A. It is in feeding the operating machine.

Q. And after that does the human hand touch it at all?

A. It is entirely automatic after that.

Q. Is it not possible for the bottle caps, such as are used in the city of Chicago today, to be touched by the human hand in the filling process, on the glass bottle?

A. It should be automatic. If one is not operated automatically, it should be excluded.

The Master: Q. In other words, those caps are put
867 on by machine?

A. That is true.

Mr. Gariepy: Q. And is it just as possible for the man who puts those on the machine, who stands by and sees to the capping process as it goes around and operates, for him to be diseased, as it is the man at the end of the Ex-Cell-O machine filling the Pure-Pak container?

A. Surely.

The Master: Let us not go into that. That is argumentative.

Mr. Gariepy: He has been talking about disease and that stuff.

The Master: You don't have to have the witness testify to those things.

Mr. Gariepy: Q. Have you found any problems, Doctor, in the matter of the use of the paper container, since November, 1938, in these various suburbs that you represent, in performing tests and research work on, from time to time, that you felt you did not have absolute control of?

A. No.

Q. I ask you the same question with regard to the glass bottle.

A. Yes, the same.

868 Q. Have you had any less control over the paper bottle than you have over the glass bottle?

A. I don't think so.

Mr. Gariepy: That is all.

Recross Examination by Mr. Schaefer.

Q. Doctor, do you know the origin of these containers?

The Master: Which containers?

Mr. Schaefer: The paper containers.

The Witness: A. The Cherry River Company, I think, is the origin of them.

Mr. Schaefer: Q. How do you know that?

A. That is the source that is given in this report.

Q. What report?

A. That we got through Breed's office?

Q. You don't know of your own knowledge?

A. I have not observed it being made.

Q. You don't know of your own knowledge?

A. Not from observation.

Q. Do you know of your own knowledge whether any 'secondary stock' is being used in the manufacture of that paper board?

A. Only such knowledge as is given us through these tests that might indicate it. There is no indication 869 of it.

Q. What tests might indicate it?

A. The quality of the pulp that is used and the type of organisms it might contain.

Q. What tests are you talking about?

A. Pulp.

Q. The disintegration test?

A. Yes.

Q. And now, how would a disintegration test reveal whether or not secondary stock was used in the manufacture of the paper board?

A. It would add certain colors, inks, and various other things to it.

Q. If the secondary stock had those colors?

A. If the secondary stock had those colors.

Q. And if it did not, how would a disintegration test reveal the use of secondary stock?

A. It might not, if this stock was perfectly clean and carried nothing with it.

Q. That is, a disintegration test might or might not reveal the use of secondary stock?

A. It might not.

Q. Do you know of your own knowledge what treatment is given to the water at the Cherry River Paper Mill?

A. I have not observed it.

Q. You don't know whether any treatment is given 870 to the water there?

A. No.

Q. Do you know whether or not that water contains B-coli before it is treated?

A. No, I do not.

Q. Do you think it is important?

A. It might have some bearing. Mildly important.

The Master: What is that?

The Witness: Mildly so. It is a remote hazard, I would say.

Mr. Schaefer: Q. You testified that in the case of glass bottles which gave a count beyond the permissible limits you would stop the use of those bottles. What else would you do?

A. Go back to the plant then and investigate the method of cleansing and see that it is properly carried out.

Q. How did you come to permit the use of paper containers in these municipalities, Doctor?

A. They made application. It became necessary for us to decide whether there was any reasonable ground upon which we could exclude them.

Q. What investigation did you make?

A. The investigation we made was going over the research work that had been done in connection with 871 that, particularly by Dr. Breed's committee and at the University of Illinois. We covered the literature on it. I sent an inspector to the University of Illinois, had him observe the processes that were used there, to determine the sanitary qualities of the milk containers. We went over the records that they had in connection with that, and later he and I went down there, and at one time Dr. Prucha, was up there and we covered it in detail through conferences, the sanitary hazards in regard to the paper.

I took it up with the other health officers of the other villages, in conference. We decided that there was no greater hazard involved in milk in paper containers than there was in glass containers, and we thought that we would be inconsistent by excluding paper containers.

Q. Whether inspection was made or not?

A. That is true.

Q. You said there were no significant variations between the tentative regulations under which you have been operating and the regulations which have been adopted by the United States Public Health Service?

A. There are some several variations in detail 872 there.

Q. What are they?

A. I can't remember all of them. There is this one in regard to the paraffin heating, the temperature of the paraffination.

Q. And the time?

A. The temperature and the time. I understand they advocate a lower count on the rinse test for the finished product. I don't think of any others at the present time. There are others, undoubtedly.

Q. As a matter of fact, they don't say anything about the rinse test at all, do they?

A. I don't know whether they do or not.

Q. You rely considerably on Dr. Sanborn and Dr. Breed?

A. I think very well of them.

Q. Would it influence your judgment if I were to tell you that Dr. Sanborn testified as follows; this is the question:

"Without knowledge and control of the bacteriological condition of the board, rinse tests conducted to determine the bacteriological condition of the finished containers are apt to be misleading?"

And the answer was:

"May be misleading, yes."

873 **Then the next question:**

"What do you mean by control of the board used, Doctor?"

And the answer:

"The methods used in controlling the bacterial content," meaning milk sanitation.

Does that influence the degree of reliance which you are willing to place on the rinse test?

A. I still think that for those of us who have laboratories that are not complete enough to do all the work that is possible, we will have to still depend upon certain tests of that kind for our own protection.

The Master: I do not quite understand that answer.

Q. You say you will have to rely on tests of that sort for your own protection?

A. Yes. I would still have to—

Q. Here a witness, Dr. Sanborn, says that the rinse test does not necessarily—

A. Tell the whole story?

Q. (Continuing.) —tell the whole story.

A. That is true.

Q. How were you being protected by a report as to a rinse test?

A. The rinse test is part of the report, and the most
874 important, in my estimation.

Q. Dr. Sanborn says that it is not controlling, though.

A. I don't think any of our tests are ultimately controlling. They are only relative.

The Master: Anything more, gentlemen?

Mr. Schaefer: One or two more questions.

Q. You are aware that the United States Public Health Service regulations contemplate compliance with certain

items of the present milk ordinance and regulations with respect to the cleaning, the lighting, the ventilation, the nature of the material from which the fillers are made, of which the walls are made, of which the ceilings are made, the buildings in which paper containers are made and converted, are you not?

A. I did not know how far the regulations are going on that. I haven't seen that yet.

Mr. Schaefer: That is all.

Further Redirect Examination by Mr. Gariepy.

Q. Doctor, if there is undesirable secondary stock in paper board, cannot that be shown by the disintegration test?

A. If it is carrying harmful bacteria, a disintegration test should show it.

875 Q. And this matter of recommendation or suggestion of the Public Health Service that Mr. Schaefer asked you about, as to a lower count in the paper container or paper board, is not that due to the fact that the paper is more susceptible to a lower count and thus a more severe test?

A. Possibly.

Q. With regard to these tests being only relative, does not that apply to the glass, as well as the paper?

A. It applies to every process of milk control.

Q. There is no set standard you can stick to and say that this is important and you have to measure up to that; they are all relative, are they not?

A. They are all relative.

Q. In regard to the source of the making of the paper container, about which Mr. Schaefer asked you and about which you answered, I asked you the same question regarding the source of the making of the glass bottle by the Owens-Illinois people. Now, have you ever been there and checked the making there?

A. I have not.

Q. That is, checked the making of the glass that goes into the bottle?

A. I have not.

876 Q. Have you any reason to suspect that in the paper mill where they make the paper board you would find unwholesome conditions existing, any more than there

should be unwholesome conditions existing in the glass factory where they make the glass bottle?

A. Equal hazards, perhaps.

The Master: I thought the witness said there is no problem at all in the glass.

Mr. Gariepy: I didn't hear him say anything about problem.

Q. Did you say anything about problems in glass?

A. I think our problems in glass are greater, from my limited experience so far, than those in paper.

The Master: Now, wait a minute.

Q. You said a little while ago that you did not have to conduct any disintegration tests on glass, that glass is glass and you do not have to go on the inside of it. Mr. Gariepy is asking you about conditions at the plant where the glass is made. After the glass is finished there is no problem any more, is there?

A. That problem is one of recontamination in the handling.

877 Q. After it is done?

A. After it is done, that is right.

Q. He is asking you before it is done?

A. Yes. I have no reason to suspect it at all.

Mr. Gariepy: Q. Have you any reason to suspect it at a paper mill?

A. There may be a greater hazard involved in the paper mill, but I don't think it is so great that it would be necessary to inspect it.

Q. Have you had any occasion during the past nine months or ten months, since you permitted the use of paper, after making this research and this check and reading the printed material and going to Urbana and investigating all there is on it and performing your own test, to think that you should go to the paper mill of the Cherry River Paper Company and check upon this board at this time, to guard the public health of Winnetka and these other villages?

A. There is nothing in our experience to indicate that that would be necessary.

Mr. Gariepy: That is all, Doctor.

878 Further Recross Examination by Mr. Schaefer.

Q. Glass is impervious, is it not, Doctor?

A. I beg your pardon?

Q. I say, glass is impervious, is it not?

A. Yes. That is, if the surface is continuous.

Q. So the conditions in the glass factory are entirely immaterial, because the bottle will be sterilized before it is used, isn't that true?

A. Yes, there will be an attempt at sterilization before it is used. There is no guaranteed uniformity. There may be sterilized bottles, but they are not uniformly sterile.

Q. They are not?

A. No.

Mr. Schaefer: That is all.

Further Redirect Examination by Mr. Gariepy.

Q. Is that the reason why you find a variation in the count from time to time?

A. Yes. The simple fact that the standard allowance is one bacteria per cubic centimeter, which would be around a thousand per each quart bottle, indicates there may be a large variation, even with the safeguards we try to maintain.

Q. And was not that standard employed and set up
879 before the paper bottle was given the extensive use it has today?

A. That is true.

Mr. Gariepy: That is all.

The Master: Is that all?

Mr. Gariepy: Is that all, Mr. Schaefer?

Mr. Schaefer: That is all, yes.

The Master: You may be excused.

(Witness excused.)

The Master: Now, you want to recall this witness?

Mr. Gariepy: I want to recall Mr. Taylor for a question or two.

CLINTON L. TAYLOR, recalled as a witness on behalf of the plaintiff, having been heretofore duly sworn, resumed the stand and testified further as follows:

Direct Examination by Mr. Gariepy.

Q. Your name is what?

A. Clinton L. Taylor.

Q. Mr. Taylor, have you heard the questions asked Dr. Orvis here concerning glass milk bottles, the making of glass milk bottles this afternoon?

A. I have.

880 Q. I ask you as a chemist, are all glass milk bottles made so that there is lead salts fused with the glass?

Mr. Schaefer: That is objected to as immaterial, obviously so.

Mr. Gariepy: You are talking about bacteria and bugs getting into the paper and second-grade stock and the contents of all of this stuff.

The Master: Off the record.

(Discussion had off the record.)

The Master: You may answer the question, if you wish.

The Witness: A. Glass bottles contain considerable lead salts.

Mr. Gariepy: Q. Are the lead salts in the printing ink that was testified to this morning by you as used on the Pure-Pak container, are they no more soluble in water than the lead salts in the glass milk bottle?

A. They are just the same.

The Master: What is that?

The Witness: I say they are just the same.

Mr. Gariepy: Q. The lead salts in the glass milk bottle that are used in producing and making the glass bottle are no more soluble than those used in the ink here?

881 A. We use ground glass as a pigment.

Mr. Gariepy: That is all.

The Master: Any questions, Mr. Schaefer?

Mr. Schaefer: No, sir.

The Master: That is all.

(Witness excused.)

The Master: Anything else?

Mr. Gariepy: I proposed to put on Dr. Woodman, until that message came this morning.

Mr. Schaefer: Is that all you have for today then?

Mr. Gariepy: Yes.

The Master: Off the record.

(Discussion had off the record.)

The Master: Let the record show that this hearing will be continued on next Tuesday at ten o'clock, September 12th.

Whereupon the further hearing of the above entitled cause was continued to Tuesday, September 12, 1939, at 10 o'clock a. m.

UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

I, Kenneth J. Carrick, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing printed pages contain a true copy of Volume 1 of the printed record, printed under my supervision, and filed on the twenty-first day of February, 1941, which, together with Volumes 2 and 3, constitutes the record in the following entitled cause:

Cause No. 7502.

Fieldcrest Dairies (Inc.),

Plaintiff-Appellee,

vs.

City of Chicago (a Municipal Corporation), Board of Health of the City of Chicago, Dr. Robert A. Black, Health Commissioner and Acting President of Board of Health of the City of Chicago,

Defendants-Appellants,

as the same remains upon the files and records of the United States Circuit Court of Appeals for the Seventh Circuit.

In Testimony Whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the City of Chicago, this 5th day of September, A. D. 1941.

(Seal)

Kenneth J. Carrick,
*Clerk of the United States Circuit Court
of Appeals for the Seventh Circuit.*